

ROUTLEDGE
ROUTLEDGE
INTERNATIONAL
HANDBOOKS



Routledge Handbook of Sport and the Environment

Edited by Brian P. McCullough
and Timothy B. Kellison



ROUTLEDGE HANDBOOK OF SPORT AND THE ENVIRONMENT

The natural environment is a central issue in both academic and wider societal discourse. The global sport industry is not immune from this discussion and has to confront its responsibility to reduce its impact on the natural environment. This book goes further than any other in surveying both the challenges and the opportunities presented to the sports industry as it engages with the sustainability agenda, exploring the various ways in which sport scholars can integrate sustainability into their research. With a multidisciplinary sweep, including management, sociology, law, events, and ethics, this is a ground-breaking book in the study of sport.

Drawing on cutting-edge research, it includes over thirty chapters covering all the most important themes in contemporary sport studies such as:

- climate change, sustainability, and corporate social responsibility
- ethics, governance, and the law
- event management, tourism, and pollution
- marketing, branding, and consumer behavior
- the Olympics, urban development, and mega-event legacies.

With contributions from world-leading researchers and practitioners from around the globe, this is the most comprehensive book ever published on sport and the environment.

Brian P. McCullough is the Coordinator of the Sport Sustainability Leadership Certificate and an Assistant Professor in the Masters of Sport Administration and Leadership program at Seattle University, USA. Specifically, his research interests concentrate on the managerial decision-making processes involving environmental sustainability initiatives among upper management and using the context of sport to influence environmental behaviors of sport spectators' game day and everyday life. He has published his research in the *Journal of Sport Management*, *Sport & Communication*, *International Journal of Sport Management & Marketing*, and *Quest*. Most recently, he published his first book, *Introduction to Environmental Sport Management*.

Timothy B. Kellison is an Assistant Professor in the Department of Kinesiology and Health and Director of the Sport and Urban Policy Initiative at Georgia State University, USA. The unifying theme of his scholarship is the study of the ways in which sport organizations act as community leaders with respect to various sociopolitical issues. His work has been published in the *Journal of Sport Management*, *Sport Management Review*, and *European Sport Management Quarterly*. His research has also been featured in news outlets, including National Public Radio, the *Atlanta Journal-Constitution*, *Bloomberg Businessweek*, *ESPN The Magazine*, and *The New York Times*.



Taylor & Francis

Taylor & Francis Group
<http://taylorandfrancis.com>

ROUTLEDGE HANDBOOK
OF SPORT AND THE
ENVIRONMENT

Edited by
Brian P. McCullough and Timothy B. Kellison

First published 2018
by Routledge
2 Park Square, Milton Park, Abingdon, Oxon OX14 4RN
and by Routledge
711 Third Avenue, New York, NY 10017

Routledge is an imprint of the Taylor & Francis Group, an informa business

© 2018 Brian P. McCullough and Timothy B. Kellison

The right of Brian P. McCullough and Timothy B. Kellison to be identified as the authors of the editorial material, and of the authors for their individual chapters, has been asserted in accordance with sections 77 and 78 of the Copyright, Designs and Patents Act 1988.

The Open Access version of this book, available at www.taylorfrancis.com, has been made available under a Creative Commons Attribution-Non Commercial-No Derivatives 4.0 license. Funded by Georgia State University.

Trademark notice: Product or corporate names may be trademarks or registered trademarks, and are used only for identification and explanation without intent to infringe.

British Library Cataloguing-in-Publication Data

A catalogue record for this book is available from the British Library

Library of Congress Cataloging-in-Publication Data

A catalog record for this book has been requested

ISBN: 978-1-138-66615-3 (hbk)

ISBN: 978-1-315-61951-4 (ebk)

DOI: 10.4324/9781315619514

CONTENTS

<i>List of figures</i>	<i>ix</i>
<i>List of tables</i>	<i>xi</i>
<i>Foreword</i>	<i>xii</i>
<i>Acknowledgments</i>	<i>xvi</i>
<i>List of contributors</i>	<i>xvii</i>

SECTION 1

Foundations of sport and environmental sustainability	1
1 An introduction to environmental sustainability and sport <i>Brian P. McCullough and Timothy B. Kellison</i>	3
2 Robustness of the sport and environmental sustainability literature and where to go from here <i>Cheryl Mallen</i>	11
3 Economics, sports, and the environment: incentives and intersections <i>Allen R. Sanderson and Sabina L. Shaikh</i>	36
4 Ethical foundations for sustainability in sport <i>Danny Rosenberg</i>	54
5 Climate change and the future of international events: a case of the Olympic and Paralympic Games <i>Lisa M. DeChano-Cook and Fred M. Shelley</i>	66

6	Sport-environmental sustainability (sport-ES) education <i>Greg Dingle and Cheryl Mallen</i>	79
SECTION 2		
	Management and marketing	97
7	Organizational capacity and sport, the environment, and sustainability: making the case for capacity building <i>Julie Stevens</i>	99
8	The Olympics: institutionalization and standardization of sustainability <i>Jon Helge Lesjø and Erlend Aas Gulbrandsen</i>	109
9	Environmental sustainability rhetoric in sport <i>Michael E. Pfahl</i>	121
10	Marketing sustainability through sport: the importance of target market insights <i>Galen T. Trail and Brian P. McCullough</i>	134
11	Using sustainability to attract new sponsorships <i>Lana L. Huberty</i>	149
12	Sponsors as meso-level actors in sport: understanding individual decisions as foundational to sustainability in food and drink <i>T. Bettina Cornwell and Joerg Koenigstorfer</i>	161
13	Corporate social responsibility campaigns and sports sponsorship: employee responses <i>Martin R. Edwards</i>	176
14	Vancouver, green capital: the green business branding strategy of the host city of an Olympic Games <i>Joseph Weiler and Patrick Weiler</i>	190
SECTION 3		
	Facilities and operations	205
15	Assessing the environmental impact of economic activity surrounding major sport events <i>Andrea Collins and Annette Roberts</i>	207

Contents

16	Environmental certifications of sport facilities and events <i>Sheila N. Nguyen</i>	220
17	Resident input and mega-event legacies: environmental concerns <i>Kyriaki Kaplanidou</i>	233
18	Third-party assurance of sustainability reporting: the case of the London 2012 Olympic and Paralympic Games <i>Eleni Theodoraki</i>	241
19	Implementing environmental sustainability in athletic training operations <i>Kelly Potteiger</i>	253
SECTION 4		
Event management		265
20	Sport venue sustainability: the role of local context and stakeholder engagement <i>Kathryn L. Heinze and Sara Soderstrom</i>	267
21	Sustainable behaviors and the tailgater <i>Andy Gillentine</i>	278
22	Tailgating and air quality <i>Jonathan M. Casper and Kyle S. Bunds</i>	291
23	STOKE Certified: initiating sustainability certification in surf tourism <i>Danny O'Brien and Jess Ponting</i>	301
SECTION 5		
Sociocultural approaches		317
24	Sustainability, greenwashing, and the light green approach to sport environmentalism <i>jay johnson and Adam Ehsan Ali</i>	319
25	Sport participation to create a deeper environmental identity with pro-environmental behaviors <i>Vinathe Sharma-Brymer, Tonia Gray, and Eric Brymer</i>	330
26	Sport and interspecies equity-based sustainability <i>Melanie Sartore-Baldwin</i>	340

27	Water and sports facilities: usage, issues, and solutions <i>Kyle S. Bunds</i>	351
28	Physical activity, self-organized sport, and sustainable urban development <i>Karin Book</i>	362
SECTION 6		
Law and governance		377
29	Going green: environmental review, design, and operation of sports facilities <i>Alex Porteshawver</i>	379
30	A little green: the European Union's efforts to promote environmental sustainability in sport <i>Arnout Geeraert</i>	393
31	Environmental sustainability and governance in the 2012 London Games <i>Vassil Girginov</i>	404
32	Law and norms in sustainability developments in the major American sports leagues <i>Matthew T. Bodie and Lucas D. Jackson</i>	418
33	Steady-state economics and stadiums: using the Date of Ecological Maturity to conceptualize and govern sport facility construction <i>Christopher M. McLeod and John T. Holden</i>	429
Epilogue		443
34	A pragmatic perspective on the future of sustainability in sport <i>Timothy B. Kellison and Brian P. McCullough</i>	445
	<i>Index</i>	456

FIGURES

3.1	Barra Olympic Park, Rio de Janeiro, Brazil	45
10.1	Sustainability Campaign Pathway for participants	136
10.2	Sport Fan Sustainability Behavior Model	139
10.3	Cluster example for social justice segment	142
10.4	Additional cluster example of social justice segment	143
10.5	Simple example of antecedents to the behavior	144
10.6	Complex example of antecedents to specific behavior	144
12.1	Conceptual framework of individuals' (or groups') food and drink decision-making at sport events (as spectators) and its sustainability depending on micro, meso, and macro levels	166
22.1	Dylos monitor and rain-proof enclosure	293
22.2	Instrumented backpack for Comparison of Air Pollution in Transportation microENVironments (CAPTEN) for particulate matter, carbon monoxide, ozone, temperature, humidity, and location	294
22.3	Transect map for mobile data collection using CAPTEN	295
22.4	Map of the five stationary monitors with pollutant measures averaged	296
22.5	Example Dylos collection from one stationary monitor	296
22.6	Valet bike parking program at Levi's Stadium	298
23.1	Percentage of respondents who strongly disagree or strongly agree with statements about sustainability in the surf industry	307
23.2	Willingness to pay over and above market price for sustainable surf and surf tourism products	308
23.3	Mean importance ranking in surf tourism decision-making processes	308
23.4	Responses to surf tourism sustainability statements	309
28.1	A Puckelboll pitch in Stockholm	367
28.2	Detail of a Puckelboll pitch's undulations	367
31.1	Queen Elizabeth Olympic Park (née Olympic Park) in 2012	410
33.1	The circular flow of the economy according to neoclassical economics	431
33.2	The ecological economic model of the economy	431

Figures

33.3	Visualization of the Date of Ecological Maturity (DEM)	435
34.1	Mercedes-Benz Stadium in Atlanta, Georgia, pictured under construction in 2016	447
34.2	Eiffel Tower during the COP21 meeting in Paris in 2015	450
34.3	London Stadium (née Olympic Stadium), home of West Ham United Football Club, in 2016	452

TABLES

5.1	The suitability of past Olympic host cities to host events in 2100 based on 1.8 to 1.4 °F temperature increases and 1–3.9 ft sea level rise	72
5.2	Suitable summer host Olympic and Paralympic cities in 2100 based on increases in temperature and sea level	74
6.1	Strategic aligned learning model (SALM) of teaching and learning	87
6.2	Two examples of how the SALM might be applied in a standalone sport-ES course	88
12.1	Challenges to sustainability food and drink in the sport context and calls for action for sponsors (and sponsored entities) as meso-level actors	171
13.1	Likely employee response and mechanisms triggered linked by particular stakeholder CSR foci	182
14.1	Vancouver 2020 targets	193
15.1	The economic and environmental impact attributable to three major sporting events	213
15.2	Breakdown of EF and ENVIO results by consumption category	216
15.3	Summary of visitor travel and corresponding EF	216
17.1	Perceived environmental legacies among three Summer host cities' residents	237
18.1	Number of performance indicators in GRI sustainability themes fully reported in LOCOG annual reports vs. total available	247
22.1	Travel emissions per game, vehicles only	292
22.2	Example of data collected with CAPTEN showing “spikes” of high pollutant level occurrences and suspected causes	297
31.1	Carbon footprint of Olympic and Paralympic Games by component	409
34.1	Major sports facility openings with vs. without LEED certification, 2005–2016	448

FOREWORD

Why sport and the environment?

Human societies of all types rely on the environment, and the ecosystem services provided for survival and sport, in their varied and diverse forms, are a microcosm of society. For some, like winter sports, water sports, and other outdoor pursuits, the direct link to the environment is obvious, but even athletes who primarily compete indoors rely on clean air, good nutrition, and stable, generally predictable weather for training and to optimize performance. Similarly, for a team or venue, working holistically and sustainably with the local environment maximizes efficiency and reduces costs.

It could be argued that, aggregated as a sector, sport has a relatively low environmental impact in comparison to some other industries (such as fossil fuel production, manufacturing, mining, aviation, and many others). This is undeniably true, but it does have an impact that active management can help to reduce, and sport, along with other sectors, should be working to improve its performance. Perhaps more important is the opportunity that sport has to influence the many millions of participants and fans around the world. Few other activities generate the passion and dedication that sport commands, seen in quite different ways in both the elite performer and the admiring fan. Sport is unique in creating communities of interest that stretch from local to global; a village cricket team in rural England can be a hub for a community, whereas the fan bases of Manchester United or Barcelona are worldwide and diverse. The local volunteer may dedicate most of his spare time to the village team, whereas a football fan may paint her home in club colors. What other human endeavor generates such passion and dedication?

Scientists name eras and epochs of geological time according to identifiable forces that dominate them. They have recently recognized a new geological period, the Anthropocene – the period of humankind; our species has become the dominant force affecting the functioning of the Earth's natural systems. This change started with settlement and the development of agriculture and has accelerated over time with advances in industry, communications, and medicine. Awareness of human impacts on the world has been growing since the 1960s, especially since we became able to literally look back at our planet from space and see our position in the universe. Although 1987's Brundtland Report was a landmark in developing awareness, it has only been in the last 15 to 20 years that politicians, businesses, and society more generally have started to

recognize, respond to, and seek to mitigate some of the identified impacts that our increasing consumption of energy and resources has had. The United Nations Millennium Development Goals did much to bring sustainability issues to the fore politically, but the more recent Sustainable Development Goals, published in 2015, are being used as a framework by business to mitigate impacts and have a more positive effect. It is noteworthy that sport is the only sector specifically mentioned in the Sustainable Development Goals document, although this is more for its impacts for social good than for environmental performance.

Sustainable development is a holistic concept that includes the idea of planetary boundaries, which, if exceeded, could cause irreversible damage to natural systems, along with the social and economic issues of human rights and minimum standards for living; in between the two is a space where humankind can continue to develop without abusing the environment. As a management concept, sustainable development balances environmental, social, and economic aspects in decision-making processes. The other factor of vital importance in defining sustainable development is time; our management actions now must project far into the future.

But where does sport fit in this? Why sport and the environment?

Sport has had a proven track record of delivering positive social outcomes. From global United Nations programs to local initiatives, sport has been used as a focus for social development programs. The majority of professional sports clubs have some kind of community outreach and participation program, and there are many examples where, for example, participation in sports has integrated isolated young people into more cooperative pursuits, providing the focus and discipline to channel latent aggression or frustration in a positive and controlled way. However, it seems that the sport sector may be 10 to 15 years behind other business sectors in addressing environmental issues.

There are clear parallels between sport and sustainable development. Sport provides a common space for all to participate, irrespective of race, religion, sexual orientation, or any other “defining” quality. Each sport has clear rules or laws together with the implied “contract” of “being a good sport” whereby these rules are adhered to in the spirit of fairness and respect for others. In many ways, this reflects the goals and aims of sustainable development – to provide a human society where all can participate and contribute actively and positively, enhancing rather than destroying the functioning ecosystem services that support all life.

When appointed by Marylebone Cricket Club (MCC) at Lord’s Cricket Ground in 2009, I was the first Sustainability Manager at a UK sports venue (quickly followed by Wembley Stadium and soon after by the Jockey Club and the Rugby Football Union). A year later, realizing that other venues face the same management issues, I founded BASIS, now the UK’s national body for sustainable sport. This was just a few months after the launch of the Green Sports Alliance in the United States, and we’ve recently been joined by the Sports Environment Alliance in Australasia. Collectively, sport has realized it has an impact and, importantly, that environmental changes will have an impact on it.

The issues that face us are common to all people in all countries from all backgrounds. It is only through cooperation that we can mitigate some of the effects. Sport has the audience and the necessary frameworks to communicate what needs to be done in a non-threatening manner, from a recognized and trusted source and in a common language of fairness and respect for others. To paraphrase a well-known saying, with great power comes great opportunity, and sport is in a prime position to responsibly exercise its unique position to create global awareness.

But sport is not able to do this alone. Clubs and venues must work with business partners, both those directly related to the sports sector (like kit manufacturers, travel companies, etc.) and ancillary partners (such as sponsors, advertisers, concessionaires, and others) to make sustainable behavior normal and accepted. There is also a central and important role for academics

and academic research. This book is a timely contribution to the burgeoning arena of academic research on environmental performance in sport and will make a significant contribution to mainstreaming environmental performance into sport management. Although there are many remarkable case studies of sports organizations taking a lead and making substantial changes to reduce their impact, many of which are highlighted in this book, the need for further change has not deeply permeated the sport sector yet, and many opportunities remain.

Russell S. Seymour
Sustainability Manager, Marylebone Cricket Club
Chair, BASIS (the British Association for Sustainable Sport)
Visiting Lecturer, Loughborough University

Expectations for the future of sustainability and sport

It is okay for a company not to be perfect, as long as they are honest about their efforts and communicate candidly about where they are in their sustainability journey. This statement paraphrases a key finding from research conducted with consumers in 10 of the largest countries in the world (Cone Communications/Echo Research, 2013). Today, the need for honesty and candidness continues, as information floods and public scrutiny of organizations' behavior intensifies. Sustainability and accountability are some of the hot topics in the boardrooms of many of today's corporations. Authentic environmental stewardship is only one piece of the sustainability puzzle (although a big one!).

One can argue that recent scandals in soccer, athletics, and mega sporting events increase the pressure on sport governing bodies to be more transparent and take responsibility for their leading roles in the administration of the world's largest sporting events. However, sustainability is often still perceived as an organization's responsibility or their charitable contribution to society. Sustainability initiatives in the long term will only be successful if they go beyond those aspects and provide new opportunities to the sport.

Sustainability should not be simply viewed as a cost or financial burden to the organization, but rather holistically as an investment in the long-term development and success of the sport industry or a specific sport event.

This book helps us better understand the intersection and integration of sustainability, with a pronounced focus on environmental sustainability, within the sports industry through providing insight in the following ways:

- *Laying a foundation* of frameworks, international standards, and existing literature
- *Developing a strategy* with the right impact of sustainability on executive decision-making
- *Embedding in daily operations and events* to ensure organizations "walk the talk"
- *Looking at the big picture* of sustainability by including socio-cultural elements
- *Regulating and administrating* through insights into legal frameworks and existing governance structures

The subject of sport sustainability is simultaneously pressing and promising, fascinating and frustrating, and easy but enormous. A few introductory thoughts:

- **A "pracademic" approach is essential.** Research on sport sustainability is still in its infancy, but there are valuable lessons to learn from other fields. Furthermore, bridges need to be built to close the gap between academics and practitioners, as a "pracademic" approach to sustainability might prove to be most efficient. Sport management programs

need to integrate sustainability in their curriculum just as much as sustainability educators need to better understand the specificities of the sporting world.

- **Leadership evolves.** One of the leaders in the international sports industry, the International Olympic Committee (IOC), appointed in 2015 its first Director of Sustainability. This, together with Olympic Agenda 2020, a strategic roadmap for the Olympic Movement, firmly puts sustainability on the agenda in executive meetings of (Olympic) sponsors and International Sport Federations. Moreover, it also drives the IOC towards improving its own internal processes to “lead by example.”
- **Different systems.** The sport industry is becoming more and more global, with events taking place around the world. This fact hugely complicates sporting events’ sustainability strategies as programs need to be tailored to the local context. The European sport system also is very different from the North American system. The influence of sport federations, for example, is very little in North America. In Europe, the role of (international) federations such as FIFA and UEFA is highly significant as they control even the most important international competitions (e.g., FIFA World Cup). Other differences concern the power of club owners, the existence of fans clubs, and the spending of public funding on (European) stadiums and teams.

Is it okay for the sport industry not to be perfect when it comes to sustainability? Yes, as long as organizations, in their decision making, maximize their positive impact and minimize their negative impact in the social, economic, and environmental spheres. This will require an open dialogue between the different stakeholders and acknowledgment that different organizations have different objectives (e.g., host city versus sponsor). Insights from both practitioners and academics in this book will help frame these discussions and build a foundation for the sustainable development of the sports world.

Geert Hendriks
Académie Internationale des Sciences et
Techniques du Sport (AISTS)

Reference

Cone Communications/Echo Research. (2013). *Global CSR study*. Retrieved from <https://static1.squarespace.com/static/56b4a7472b8dde3df5b7013f/t/574266b260b5e9c976821ab4/1463969531032/Cone+CSR+Report.d3r8.pdf>

ACKNOWLEDGMENTS

We are grateful to the staff at Routledge for their leadership and support in this endeavor. Simon Whitmore and Cecily Davey deserve special mention for their expertise and encouragement. We would also like to thank the contributors to this text; they represent the best that the sport and environment academy has to offer. We appreciate their efforts here and in the field more generally. Finally, thanks to the expert reviewers whose feedback led to significant improvements in the final product.

Brian would like to thank his wife, Ashley, and his son, Fulton, who inspire and encourage his line of research examining sport and sustainability. Totus tuus.

Brian would also like to thank the administration at Seattle University, the dean of the College of Arts and Sciences, and the faculty of the Masters of Sport Admiration Leadership program for their forethought to create the Sport Sustainability Leadership program and to more deeply integrate sustainability throughout Seattle University's world-class curriculum.

Tim is grateful to his spouse, Rosemary, whose own scholarship has pushed him to think more deeply in his own work. He also thanks his colleagues, students, and administration at Georgia State University and the Sport and Urban Policy Initiative for their unwavering support.

CONTRIBUTORS

Adam Ehsan Ali is a PhD Candidate in the School of Kinesiology and Health Studies at Queen's University in Kingston, Canada, and is enrolled in socio-cultural studies of sport, health, and the body. His research interests include exploring the intersection between sport and the environment and specifically how increasingly prominent environmental issues are addressed within sport culture. He is currently investigating the role of affect theory within the field of sport studies, and how this theory relates to the War on Terror, Islamophobia, and anti-Islamic violence. His master's thesis at the University of Windsor focused on the migration of Canadian student-athletes to the NCAA. Ali is a former elite field hockey player and has over a decade of experience working in Canadian intercollegiate athletics in event management and sports information.

Matthew T. Bodie is the Callis Family Professor at Saint Louis University School of Law. He has published over 40 books, book chapters, journal articles, and essays. He served as a reporter for the American Law Institute's *Restatement of Employment Law* and was the primary author for the chapter on employee privacy and autonomy. He has written opinion pieces for *The New York Times* and Quartz.com, and has been quoted in *The New York Times*, *Los Angeles Times*, and *New Republic*. Bodie received an AB from Princeton University, a JD from Harvard Law School, and an LLM from New York University School of Law. He served as a field attorney at the National Labor Relations Board. He has taught at Harvard Law School, Hofstra University School of Law, NYU School of Law, and Notre Dame Law School.

Karin Book, PhD, is a Senior Lecturer in sport science at Malmö University, Sweden. With a background in the field of urban geography, Book's main research interest concerns spatial issues in connection to sport and physical activity. This includes different aspects on how urban planning and development strategies affect the opportunities for residents to be physically active. Moreover, Book teaches sport studies, human geography, sustainable development, and leisure studies at Malmö University and partners with sport organizations, municipal planning departments, and consultant firms within the fields of urban development and sport.

Eric Brymer, PhD, is a Reader in the school of sport at Leeds Beckett University. He specializes in the reciprocal nature of well-being outcomes from nature-based activities. Eric is

a registered psychologist and holds PhD and Master's degrees in Applied Sport and Exercise Psychology and post-graduate degrees in Education and Business. He also holds research positions in health and outdoor studies at Queensland University of Technology, Australia, and the University of Cumbria, UK.

Kyle S. Bunds, PhD, is an Assistant Professor in the Department of Parks, Recreation, and Tourism Management at North Carolina State University, where his research and teaching examines the connection between sport and the environment generally, and sport, water, and air pollution more specifically. His work, which is primarily grounded in political economic theory, has been published in numerous academic journals, including *Sport Management Review*; *European Sport Marketing Quarterly*; *Sport in Society*; *Journal of Sport Management*; *Critical Studies in Media Communication*; *Communication, Culture, & Critique*; *Cultural Studies ↔ Critical Methodologies*; and *Water Resources: IMPACT*. He is currently working on a book under contract with Routledge focusing on sport, water, charity, and the body, entitled *Sport, Politics and the Charity Industry: Running for Water*. In addition to his scholarship, Bunds has guest edited a special issue on political economics for the *Journal of Amateur Sport*, serves as the associate editor for the *Journal of Amateur Sport*, and is currently guest editing a forthcoming special issue on sport, physical culture, and the environment in the *Sociology of Sport Journal*.

Jonathan M. Casper, PhD, is an Associate Professor and Sport Management Program Coordinator in the Department of Parks, Recreation, and Tourism Management in the College of Natural Resources at North Carolina State University. He is an internationally recognized researcher on sport and the natural environment. His research seeks to help sport organizations integrate sustainability efforts into organizational operations, marketing, and fan engagement. His expertise lies in leveraging sport events as informal educational settings (or platforms) and influencing sustainable behavior change. Casper has worked extensively with collegiate athletic departments, professional sport teams, and corporate sponsors on implementation and evaluation strategic sustainability efforts. Casper has published in leading peer-reviewed academic journals specific to sport and sustainability and participation and presented his findings at international conferences. He is co-editor of a related text titled *Sport Management and the Natural Environment: Theory and Practice*. He has received external funding for his work on sustainability education and engagement and serves as a consultant for marketing sustainability and health.

Andrea Collins, PhD, is a Lecturer at the School of Geography and Planning, Cardiff University. She has research interests in the ecological footprint and assessing the impacts and legacies of major sport events and festivals. She has been involved in several studies which have examined the environmental impacts of tourism and events, including Tour de France, FA Cup Final, Rugby Six Nations, Hay Literature Festival, and the Isle of Wight Festival. Her research has been published in a number of international peer-reviewed journals, including *Journal of Sustainable Tourism*, *Journal of Travel Research*, *Urban Studies*, and *Tourism Management*. She has recently published a co-authored research monograph on *The Ecological Footprint – New Developments in Policy and Practice*.

T. Bettina Cornwell, PhD, is the Edwin E. and June Woldt Cone Professor of Marketing in the Lundquist College of Business at the University of Oregon. Her primary research interest is in difficult and high-context communications where many things are left unsaid and meaning is derived from actors, symbols, logos, and the social milieu. This is found in indirect marketing,

such as sponsorship, celebrity endorsement, and brand placement. Bettina's research has appeared in the *Journal of Advertising*, *Journal of Consumer Research*, *Journal of Experimental Psychology: Applied*, *Journal of the Academy of Marketing Science*, and *Journal of Public Policy & Marketing*. Her book, *Sponsorship in Marketing: Effective Communication through Sports, Arts, and Events*, was published by Routledge in 2014. She is the 2016 Thomas C. Stewart Distinguished Professor.

Lisa M. DeChano-Cook, PhD, is an Associate Professor of Geography in the Department of Geography at Western Michigan University. She received her PhD from Texas State University-San Marcos in 2000 and has taught at California State Polytechnic University, Pomona. Her research interests include physical/environmental geography, environmental impact, natural hazards, hazard perception, geographic education, and sports geography. She has co-authored several books, book chapters, and journal articles on these topics.

Greg Dingle, PhD, is a Lecturer in Sport Management in the Department of Management within the La Trobe Business School of La Trobe University in Melbourne, Australia. Dingle is also a research associate of La Trobe University's Centre for Sport and Social Impact where his expertise is in the fields of sport and climate change, sport management and environmental sustainability, and Education for Sustainability (EfS). His doctoral research examined the implications of climate change for major Australian sport stadia, and his current post-doctoral research is focused on the vulnerability and resilience of community sport to climate change and adaptive responses to such impacts. He has published refereed articles in the *International Journal of Sport Marketing & Sponsorship* and *Managing Leisure*, and his teaching currently includes sport management, sport policy, and sustainability problems and thinking. Dingle has previously convened and taught sustainability and climate change for sport management.

Martin R. Edwards, PhD, has a background in organizational psychology, human resource management (HRM), and industrial relations. Edwards's academic interests include researching organizational identification, employee-organizational linkages, social and multiple identities in organizations, the role of employee and employer branding in organizations, employee responses to mergers and acquisitions, and HR analytics, as well as employer responses to judgments of their employer's corporate social responsibility credentials. Edwards has published in numerous international journals, including the *Human Resource Management Journal*, *Human Relations*, the *Human Resource Management Journal*, *International Journal of Management Reviews*, *Economic and Social Democracy*, *European Journal of Work and Organisational Psychology*, and *Personnel Review*. In addition, Edwards has published books in the area of HRM, including *Predictive HR Analytics: Mastering the HR Metric* (co-author) and *Managing Human Resources: Human Resource Management in Transition* (co-editor).

Arnout Geeraert, PhD, is a Post-Doctoral Fellow at KU Leuven, LINES institute. His recent work analyzes the role of the European Union in international sport through different theoretical lenses, looks into elements of good governance in sport organizations, and explores the causes of corruption in international sport federations. His work has appeared in such journals as *Journal of European Public Policy*, *Journal of European Integration*, *Journal of Sport & Social Issues*, *Environmental Policy and Politics*, and *International Journal of Sport Policy and Politics*. He is the author of *The EU in International Sports Governance* (Palgrave, 2016). Geeraert is a member of the UNESCO MINEPS VI Working Group "Protecting the Integrity of Sport." He has acted as a consultant for the Council of Europe, advised the EU Expert Group on Good Governance,

and develops the Sports Governance Observer for Play the Game/Danish Institute for Sports Studies.

Andy Gillentine, PhD, is a Professor and Associate Dean in the College of Hospitality, Retail & Sport Management at the University of South Carolina. In 2012 he was named Distinguished Sport Management Educator by the North American Society of Sport Management and in 2009 received the Sport Management Outstanding Achievement Award from the National Association of Sport and Physical Education. He is nationally recognized for his expertise in sport management curriculum and program development. His research interests are sport marketing, professional development, and management issues in sport, and he is recognized as one of the leading experts in the study of the legal, managerial, and marketing aspects of tailgating. He has conducted research projects for numerous sport organizations that have resulted in over 50 publications, four books, and over 100 national and international presentations.

Vassil Girginov, PhD, is Reader in Sport Management/Development at Brunel University London and Visiting Professor at the Russian International Olympic University. His work is concerned with understanding the relationship between the Olympic Games and social change in various cultural and economic milieus. His research interests, publications, and industry experience are in the field of Olympic Movement, sport development, comparative management, and policy analysis. Girginov's most recent books include *Olympic Studies*, a four-volume collection (Routledge, 2015); *Handbook of the London 2012 Olympic & Paralympic Games* (two volumes; Routledge, 2012–2013); *Sport Management Cultures* (Routledge, 2011); and *Management of Sports Development* (Elsevier, 2008).

Tonia Gray, PhD, is a Senior Researcher in the Centre for Educational Research, where she explores human–nature relationships and their impact on well-being and personal development. For 30 years, she has been devoted to the interplay of curriculum development that incorporates the benefits of outdoors learning for pre-service teacher training. In the mid-1980s, Gray was the first woman to teach Wilderness Studies as an accredited Australian School Certificate course, and her PhD was a landmark longitudinal study of the educational benefits of a 12-month outdoor immersion experience within a wilderness environment for adolescents. As a multi-award-winning pedagogue, in 2014, she received a prestigious Office of Learning and Teaching (OLT) Australian Award for University Teaching for Excellence in outdoor experiential education.

Erlend Aas Gulbrandsen is a research scholar in corporate sustainability at Lillehammer University College. He has published articles on implementation of sustainability and sustainability in the Youth Olympic Games.

Kathryn L. Heinze, PhD, is an Assistant Professor of Sport Management at the University of Michigan. Kathryn's research uses institutional and social movement theory to examine how and why individuals and organizations enact, lead, and respond to social and institutional change. She studies these dynamics in the contexts of sport and health/wellness and has published in journals such as *Organization Science*, *Organization Studies*, and the *Journal of Sport Management*. Kathryn earned her MA and PhD in Management and Organizations from the Kellogg School of Management at Northwestern University and her BA in Organizational Studies from the University of Michigan.

Geert Hendriks is the AISTS Head of Projects and is responsible for a range of applied research and consulting projects. He works closely with the International Olympic Committee (IOC), many international sport federations, and professional sport leagues to deliver on a range of initiatives. He is also tasked with the management of the AISTS Sustainable Sport and Events Centre, whose goal is to engage and empower cities and event organizers by providing practical and comprehensive resources on sports event sustainability and (corporate) social responsibility. Hendriks is a Founding Director of Sport and Sustainability International (SandSI). Prior to joining AISTS, Hendriks worked for more than 10 years in both the corporate industry and humanitarian aid sector as a management consultant and project director. He speaks at international conferences and publishes regularly on the subject of sustainability and healthy communities within the context of the Olympic Movement. In 2016, Hendriks received the Peace & Sport Special Jury Award for a project related to the participation of refugee athletes in the Rio 2016 Olympic Games. In his free time, he plays any sport that involves a ball, spearheads the development of korfbal within Switzerland, and organizes sport activities with Lausanne-based refugees.

John T. Holden, PhD, is a Visiting Scholar at Florida State University in the Department of Sport Management. His recent scholarship has been published in legal journals associated with Stanford, Harvard, the College of William and Mary, and the University of Washington, as well as peer-reviewed journals, including the *British Journal of Sports Medicine*, the *International Sports Law Journal*, and the *International Journal of Sport Policy and Politics*. His scholarship is focused on issues of sport corruption and governmental policy. John earned his PhD from Florida State University, his LLB from the University of Ottawa, and his JD from Michigan State University. He is a native of the Toronto area.

Lana L. Huberty, PhD, is an Assistant Professor, Sport Management Department Chair, and fitness professional. She earned a PhD in Kinesiology with a Sport Management emphasis from the University of Minnesota. Huberty joined the faculty at Concordia, St. Paul in 2013. She brought with her a wealth of industry practice in both private and public sport and recreation settings. Huberty's expertise in health and wellness includes over 25 years of group and individualized fitness training for which she holds numerous professional certifications, including NETA, LMI, PHI, MOSSA, and YogaFit. Her research interests and publications focus on sustainability, sport marketing and sponsorship, diversity within sport management, and general health and wellness.

Lucas D. Jackson is a second-year law school student at the Saint Louis University School of Law. He is a member of the Law Journal, Phi Delta Phi, and Alpha Phi Sigma; is a Student Bar Association Representative; and is President of the Law Students for Veteran's Advocacy. Luke works part-time as a faculty fellow researcher for Professors Matthew Bodie and Jeff Redding and has accepted a position at Bryan Cave LLC as a summer associate. Prior to law school, Jackson graduated from Columbia College with a Bachelor of Science in Criminal Justice and is a proud veteran member of the United States Air Force. Moving forward, Jackson plans to concentrate his career on pursuing his interests in corporate civil litigation, while continuing to orchestrate philanthropic efforts to assist veterans' needs and interests.

Jay Johnson, PhD, is an Associate Professor in the Faculty of Kinesiology and Recreation Management at the University of Manitoba. His current interdisciplinary research explores

the impact(s) of climatic change on our physical experiences and the interfaces with the environment. He is investigating how Aboriginal youth experience the built environment and outdoor adventure-based education; community-based research examining the function of the bicycle; culture and community in activ(ism); child labor issues; bullying; doping; and the cultural intersections of gender, race, ethnicity, sexuality, and homophobia in team initiation rituals. He has published extensively on hazing, co-editing *Making the Team: Inside the World of Sport Initiations and Hazing*. He is a former wrestler, hockey player, and triathlete who can now occasionally be seen on a triathlon course as either a coach or a participant and an avid cyclist who is keen to make opportunities available for all to tap into the joy of being on two wheels.

Kyriaki (Kiki) Kaplanidou, PhD, is an Associate Professor in the Department of Tourism, Recreation and Sport Management at the University of Florida. Kaplanidou is the Director of the Innovative Research Initiatives in Sport Events (i-Rise) lab at the University of Florida. Her main research interests relate to the evaluation and management of sport event legacy outcomes. Current research grant topics include the impact of the 2022 Qatar World Cup among Qatar residents and sport event participants' evaluations of event experiences and quality-of-life connections. Kaplanidou has also been funded by the International Olympic Committee to examine the long-term legacy of the Olympic Games in various host cities and other international sport organizations. She has published over 45 scientific articles in academic peer-reviewed high impact journals in the sport management and tourism disciplines.

Joerg Koenigstorfer, PhD, is Full Professor and Chair of Sport & Health Management at Technische Universität München. Koenigstorfer's research focus is on consumer behavior in sports and health. He is a member of the editorial board in the *European Sport Management Quarterly* and has published articles in renowned journals, such as *Journal of Marketing Research*, *Journal of Public Policy & Marketing*, *Marketing Letters*, *Appetite*, *Public Health Nutrition*, *British Journal of Nutrition*, and *Physiology & Behavior*, as well as *Journal of Sport Management* and *European Sport Management Quarterly*.

Jon Helge Lesjø, DrPhil, is Professor in Public Policy and Planning at Inland Norway University of Applied Sciences, Lillehammer. He is a sociologist, and his teaching and research interests cover topics like the Winter Olympic Games, the sociology of sport, and public policy. He has done research on the planning, governance, and decision-making processes that led up to the Lillehammer 1994 Games. Lesjø has also studied the patterns of influence between the international actors and the local organizing committee in connection with the Youth Olympic Games in 2016. Moreover, the subjects of reforms, ideologies, and development at the level of local government have long been a part of his direction in research.

Cheryl Mallen, PhD, focuses her research on two key areas. The first involves sport facility and event management with an emphasis on environmental sustainability (ES). Within ES, she seeks to develop understandings on performance, including tools and barriers to measure performance, and strategies to enhance an evolving level of ES (including best practices, challenges, trends, and required competencies). Second, her focus is on sport ethics and the advancing new technologies. Further, she seeks to define knowledge in sport and determine knowledge transfer processes for advancing successful ES strategies and ethical states for sport. She has published in a variety of journals, such as the *Journal of Sport Management*, *Sport Management Review*, *European Sport Management Quarterly*, *Sport in Society*, and *Sustainability*.

Christopher M. McLeod is an Assistant Professor at Texas Tech University. He received a BS in Physical Education from Otago University in New Zealand and an MS and PhD in Sport Management from Florida State University. His research interests include ecological economics, political economy and ecology, and the science and technology of sport markets. With this scholarship, he endeavors to inform scholars, practitioners, students, and citizens on how to organize sport in a sustainable, equitable, and just manner. His scholarly and creative works have appeared in *Body & Society*, *Journal of Sport and Social Issues*, and *Cultural Studies ↔ Critical Methodologies* and are forthcoming to the *William & Mary Environmental Law and Policy Review*.

Danny O'Brien, PhD, is Associate Professor and Head of Program, Sport Management, Faculty of Health Sciences & Medicine, Bond University, Gold Coast, Australia. He is a graduate of Australian Catholic University; California State University, Long Beach; and DeMontfort University, England; and a Visiting Scholar at both the Center for Surf Research, San Diego State University and the Plymouth Sustainability and Surfing Research Group, Plymouth University, UK. O'Brien's research interests are in sustainable surf tourism, event leverage, and organizational change in sport. Each area shares a common sport-for-development thread and the aim to assist stakeholders in realizing community-building outcomes from sport. Danny has published in journals such as *Journal of Sport Management*, *Sport Management Review*, *European Sport Management Quarterly*, *Annals of Tourism Research*, *Journal of Sustainable Tourism*, *European Journal of Marketing*, and *Journal of Leisure Research*. Now too old and beat up to play his beloved rugby codes, O'Brien remains an enthusiastic surfer.

Sheila N. Nguyen, PhD, is the Executive Director of the Sports Environment Alliance, Inc. (SEA). She earned her PhD in Sport Management from Florida State University and specializes in corporate social responsibility with ongoing research interests in environmental responsibility, measurement, and research design. She has had experience working with licensing/marketing (PGA Tour, USA) and corporate consulting (William Morris Agency, Beverly Hills), and she worked as part of the broadcasting team at the 2010 Asian Games (Guangzhou, China) with clients such as NHK, Al Jazeera, and CCTV. Nguyen is a member of Baseball Victoria's Board of Directors.

Michael E. Pfahl, PhD, is an Associate Professor in the Department of Sports Administration at Ohio University. His current research interests are conducted primarily from a qualitative perspective and focus on sport and the natural environment. Additionally, he studies the convergence of media, technology, and sport, as well as human resource issues in sport organizations and undergraduate education. Having worked in the National Basketball Association, the International Hockey League, and the athletic representation industry, he remains involved in the sport industry through consulting activities, including those done for several different sport and non-sport organizations related to environmental efforts.

Jess Ponting, PhD, is Associate Professor of sustainable tourism and Director of the Center for Surf Research at San Diego State University. He has dedicated his research career to exploring the sustainability of surf tourism, particularly in less developed countries. Jess has attempted to cross the divide between theory and practice and has been involved in surf tourism planning, policy, and regulation development. To this end he has worked with international nongovernmental organizations (NGOs) and multilateral agencies (Conservation International, the United Nations' International Trade Center) and a variety of national and regional governments from

Fiji in the Pacific, to the Maldives and Indonesia in the Indian Ocean, and Portugal and Liberia in the Atlantic. He is the founder of the International Association of Surfing Academics and staged the first conference on surfing and sustainability in 2011. Despite possessing only marginal surfing ability, he is an avid surfer.

Alex Porteshawver is a sustainability planner with over eight years of experience assisting local, regional, state, and federal agencies to implement greenhouse gas emissions reduction projects and programs and to increase local resiliency. Porteshawver has a law degree from Marquette University Law School, with a special focus on environmental and sports law, and a master's of environmental law and policy from Vermont Law School. While at Marquette, she served as the Editor-in-Chief of the *Marquette Sports Law Review* and published two comments on the interaction of sport, law, and the environment. Currently, she combines her academic background with real-life experience implementing climate action plans (CAPs) and working locally and regionally to develop practical solutions to climate change, primarily in California but also nationwide. She works on a variety of projects, including local hazard mitigation plans, local coastal programs, sustainable affordable housing, climate change vulnerability assessments, CAP implementation, greenhouse gas emissions inventories, and private-sector engagement on sustainability issues.

Kelly Potteiger, PhD, ATC, LAT, is an athletic training educator who also spent years engaged in clinical practice at the collegiate level. These experiences are reflected in the diversity of her research interests, which include both pedagogical practices and clinical applications. She publishes and presents over a broad range of topics, including environmental sustainability in athletic training, special topics in athletic training education, celiac disease, and concussion policy. In addition to her PhD in Athletic Training from Rocky Mountain University, Potteiger holds a Bachelor of Science degree from Mississippi State University and a Master of Science from the University of North Texas. She currently resides in Wheaton, Illinois, where she is the Athletic Training Program Director and Associate Professor at Northern Illinois University.

Annette Roberts, PhD, is a Senior Lecturer at Cardiff Business School, Cardiff University. Annette is also Deputy Director of the Welsh Economy Research Unit and Editor of the *Welsh Economic Review*. She has research interests in regional economic and environmental modeling and analysis, and has been involved in a wide range of impact studies. These studies have included estimating the economic and environmental impacts of sport, sport events, tourism, and many other sectors and activities in the local and national economy. Roberts is also involved in research on the economic development impacts of public-sector procurement and the regional economic effects associated with business exploitation of superfast broadband. Her research has been published in a number of international peer-reviewed journals, including the *European Journal of Operational Research*, *Journal of Travel Research*, *European Sport Management Quarterly*, and *Urban Studies*.

Danny Rosenberg, PhD, is an Associate Professor in the Department of Kinesiology at Brock University in St. Catharines, Ontario, Canada. He teaches and conducts research in the areas of sport philosophy and ethics. He has published in *Sport, Ethics and Philosophy*; *Journal of the Philosophy of Sport*; *Sport in Society*; *Olympika*; and chapters in several anthologies. He is co-author with Joy DeSensi of *Ethics and Morality in Sport Management* (3rd ed., Fitness Information Technology, 2010) and served as past president of the International Association for the Philosophy of Sport.

Allen R. Sanderson is an oft-cited authority on sports economics issues, a contributor to op-ed pages on sports and non-sports topics in newspapers around the country, and a frequent guest on national and Chicago-area television and radio programs. He writes a regular column – “On Economics” – for *Chicago Life* magazine. Recent professional journal articles and book chapters are on the economic impact of colleges and universities on their communities, the political economy of Chicago’s unsuccessful bid to host the 2016 Olympic Games, an essay on happiness and economic well-being, a tribute to Milton Friedman on the 100th anniversary of his birth (1912), and an article in the Winter 2015 *Journal of Economic Perspectives* on “The Case for Paying College Athletes.”

Melanie Sartore-Baldwin, PhD, is an Associate Professor within the Department of Kinesiology at East Carolina University where she teaches in both the undergraduate Sport Studies program and the graduate-level Sport Management program. Sartore-Baldwin has researched numerous social justice and diversity-related issues within sport, including weight discrimination, sexual prejudice, gender ideology, and the use of non-human animals. Her current focus is on how the relationships humans form with non-human animals within the contexts of sport and physical activity can be leveraged to promote change. To date, she has over 60 published articles, book chapters, and refereed national and international presentations.

Russell S. Seymour is the Sustainability Manager for Marylebone Cricket Club (MCC). MCC is a Members Club that owns and runs Lord’s Cricket Ground in St. John’s Wood, London. Lord’s is the largest and busiest cricket ground in England. Seymour reports on sustainability performance and interacts with all departments to develop and implement sustainability strategies that affect the management and operation of the ground, including international and domestic cricket matches. Seymour has had the opportunity to see how powerful an influence sport can have on the behavior of both participants and fans. With this in mind, he set up BASIS (the British Association for Sustainable Sport) in 2010 with the intention of bringing together like-minded individuals at all levels of sport to share ideas, experiences, and strategies to improve sustainability performance across the sports sector. He was presented with a London 2012 Sustainability Ambassadors Award for his contribution towards a sustainable Olympic and Paralympic Games. Seymour’s background is in ecology, environmental sciences, and biodiversity management with postgraduate degrees from the University of London and the University of Kent. Seymour was actively involved in British American football as a player, coach, and manager for over 25 years.

Sabina L. Shaikh, PhD, is an economist and Director of the Environmental Studies Program at the University of Chicago. Her research focuses on how humans value the environment, with local applications to urban environment and global applications to water management and food security. She currently serves as co-principal investigator on National Science Foundation-funded research related to the interaction of water systems and livelihoods in Cambodia. She leads student projects on sustainability applied to sports, food service, and campus operations, including a project on green campus athletics recognized by the White House’s “Tackling Climate through Sports Initiative.” Shaikh has given recent talks at TEDxUChicago, Bulldog Sustainability at Yale University, and NASCAR Green, and she worked with the NFL Draft sustainability efforts in Chicago. She has published in scholarly journals and contributed chapters to several books, including the *Handbook on Metropolitan Sustainability* and *Natural Capital: Theory and Practice of Mapping Ecosystem Services*.

Vinathe Sharma-Brymer, PhD, is a Researcher in the School of Sport and the Centre for Research & Innovation in Childhood, Education and Society. She applies her academic studies and experience from Psychology, Education, and Environmental Studies to her research on human health and well-being. As a Forest School Practitioner in England, Sharma-Brymer is documenting the beneficial impact of nature on behavior and attitudinal change. She obtained her PhD from the University of Wollongong, Australia, in 2007. She is a trained Adviser in the Human Services area of Community Development. As a freelance writer, Sharma-Brymer writes on various topics and issues in two languages.

Fred M. Shelley, PhD, is Professor of Geography in the Department of Geography and Environmental Sustainability at the University of Oklahoma. He received his PhD from the University of Iowa in 1981 and has taught at the University of Southern California, Florida State University, and Texas State University – San Marcos. His research interests include political and economic geography, the geography of elections, sports and popular culture, and the human geography of the United States. He is the author of more than 100 books, journal articles, and book chapters on these and related subjects.

Sara Soderstrom, PhD, is an Assistant Professor of Organizational Studies and Program in the Environment at the University of Michigan. She earned her PhD in Management and Organizations from Kellogg School of Management at Northwestern University. In her research, she studies how individuals within organizations mobilize others, develop coalitions, and access key decision makers when they are trying to implement sustainability initiatives. Further, she studies individual and organizational responses to the ambiguity and uncertainty that surround sustainability.

Julie Stevens, PhD, is an Associate Professor in the Department of Sport Management at Brock University in St. Catharines, Ontario, Canada. Stevens examines both macro- and micro-level change through various organization theories, namely neoinstitutionalism and contemporary versions of agency theory. Her research explains the transformation of sport organizations over time. She also employs various models of organizational development to analyze dynamics of change and organizational design within sport. For the past 25 years, she has conducted diverse and transdisciplinary hockey research. Stevens has published on topics such as institutional development, large-scale change, innovation, governance, managerial logics and practices, player development models, and ethics. She is co-author of the book *Too Many Men on the Ice: Women's Hockey in North America*, and has published work on the socio-historical evolution of women's hockey. Stevens is a North American Society for Sport Management Research Fellow. She has been awarded major Canadian federal government research grants by the National Social Science and Humanities Research Council and is an advocate of international hockey scholarship, having co-chaired the 2010 international multidisciplinary conference *Hockey on the Border*.

Eleni Theodoraki, PhD, is an Associate Professor in festival and event management specializing in mega sport event management. Her research draws on organization and social theory and explores issue of governance, policy, strategy development, effectiveness, and sustainability. Eleni has worked for organizing committees for the Olympic Games and was commissioner for sustainability for the London 2012 Games. Her research has been supported by funders such as the Qatar National Research Fund, Scottish Enterprise, the British Academy, and the International Olympic Committee. She has supervised nine doctoral students in the subject and

maintains cooperation with UNESCO and Transparency International on sport governance and integrity issues.

Galen T. Trail, PhD, is a Professor and the Director of the Master's in Sport Administration and Leadership (MASL) program at Seattle University. He has also taught at The Ohio State University, the University of Florida, and Iowa State University covering a variety of classes (e.g., Sport Consumer Behavior, Sport Business and Finance, Sport Marketing, Sport Branding and Communication, and Sport Sponsorship). Trail is a world-renowned scholar in sport consumer behavior, marketing sustainability through sport, and research methods and evaluation, having published over 60 articles (in the top journals in the field), book chapters, and books. His work has been cited over 4,500 times. In addition, he is president and CEO of a sports marketing consulting firm (Sport Consumer Research Consultants – SCRC) and has worked with many sport organizations and athletic departments, helping them with market research that can improve their effectiveness and efficiency in marketing, communications, and sustainability.

Joseph Weiler is Professor at the University of British Columbia (UBC) Faculty of Law in Vancouver. He earned his BA with Honors at the University of Toronto in 1969, his LLB at Osgoode Hall Law School, York University, in 1972, and his LLM at the Berkeley School of Law, University of California, in 1974. He joined the Faculty of Law at UBC in 1974. He has taught courses on criminal law, criminal procedure, constitutional law, labor law and policy, the law of cyberspace, and the law of the Olympic Games. Weiler currently teaches courses on sports law, media and entertainment law, and criminal law. Weiler is the author, co-author, and editor of numerous publications, including books and journal articles, in all of the areas that he has taught over the years at UBC.

Patrick Weiler is a Vancouver lawyer and member of the Law Society of British Columbia. He is a graduate of the Faculty of Law of the University of British Columbia, earning a Juris Doctor degree with specializations in sports law, environmental law, and natural resources law in 2012. Patrick also received a Bachelor of Arts degree with a major in History from McGill University in 2008. Patrick has written and published numerous reports on the sustainability performance and legacies of major sporting agencies, leagues, and events, including the International Olympic Committee, the Vancouver 2010 Olympic Games Organizing Committee, the Super Bowl, the FIFA World Cup, and the National Hockey League.



Taylor & Francis

Taylor & Francis Group
<http://taylorandfrancis.com>

SECTION 1

Foundations of sport and environmental sustainability



Taylor & Francis

Taylor & Francis Group
<http://taylorandfrancis.com>

1

AN INTRODUCTION TO ENVIRONMENTAL SUSTAINABILITY AND SPORT

Brian P. McCullough and Timothy B. Kellison

There is an undeniable relationship between the natural environment and sport. Without the natural environment, humanity could not survive, much less participate or watch sport. However, the sum of our activities and our resulting collective consumption of natural resources have detrimentally affected our delicate relationship with the natural environment. As a consequence, climate change has become a common discussion point within public discourse, and although it may not be apparent how climate change can affect the various aspects of our lives, it should encourage us to reconsider the environmental impact of our consumption and behavioral patterns. However, the sum of our collective efforts may not be readily understood. It is difficult for individuals to process the total impact of their daily activities or much less the positive impact of behavioral change. Although major contributors to the detrimental impact on the natural environment may not be attributed directly to sport, we cannot ignore the impacts of the sport industry. This fact requires that the ways in which we interact with the environment be modified despite our continued desire to consume and participate in sport.

The relationship between sport and the natural environment was highlighted by Commissioner Gary Bettman in the National Hockey League's Environmental Sustainability Report (2015), where he described how the origins of hockey started on frozen ponds, rivers, and lakes. He cautioned the reader of the negative effects that climate change has on the sport – specifically, the diminished opportunities for prospective and current participants to learn and play the game. His cautionary narrative also applies to other sports that are similarly reliant on certain climate conditions to ensure the safety of participants and the opportunity to play certain sports (e.g., golf, surfing, skiing). Sport managers should heed the commissioner's warning and identify the environmental impacts their team and events have on the natural environment that may threaten the future of their sport or organization. Collectively, sport organizations can dramatically reduce their impacts by addressing various aspects of their operations such as travel, energy usage, waste management, and fan engagement, all of which can have detrimental environmental effects. Encouragingly, sport leagues like the NHL, teams, and individual fans have made the initial steps to reduce the environmental impact of their sport, league, and individual behaviors in order to prevent situations like those described by Commissioner Bettman.

Environmental action in sport is not new, as past cases illustrate how awareness of sport's detrimental environmental effects could lead to positive interventions. Recreational hunting, by way of example, can be both a utility and a recreational sport, but historically, irresponsible

behaviors of hunters led to the depletion of certain species. During the push for environmental conservation in the 1920s and 1930s, recreational hunters began to realize how overhunting led to dwindling populations of specific animals (e.g., deer, trout, waterfowl) and the reduction of these species' natural habitats further threatening their longevity and survival. In order to preserve these wildlife populations, conservation groups like Deer Unlimited and Ducks Unlimited were created to institute catch restrictions and to preserve and protect the animals' habitats (McCullough, 2015). As these organizations became more established, their organizational objectives expanded to include political lobbying to establish laws that protected wildlife and their habitats so that hunters could continue the recreational enjoyment of the sport.

We mention this specific example to illustrate that people can unite to protect the natural environment, ensuring the long-term sustainability of their sports not just for themselves, but also for future generations. Such collective efforts require coordination on many fronts to be effective and to promote change. However, there is a sense of responsibility that is lost among individuals in society as a whole, and especially germane to this book, among sport managers, fans, and participants, who have struggled to strike a balance between preserving the natural environment and the consumption of sport as both participants and spectators (Sartore-Baldwin, McCullough, & Quatman-Yates, in press). However, a select few sport organizations have established policies to internally promote environmentally responsible behaviors and have begun to integrate various initiatives into their organizations to reduce their environmental impact. Thus, we are in the initial formation of an "environmental sport movement" (McCullough et al., 2016).

The International Olympic Committee (IOC) led this movement among sport federations and organizations to preserve the natural environment starting in 1992. As a result, the Olympic Charter was amended in 1996 to stress the importance of environmental sustainability by noting that the IOC's role was "to encourage and support a responsible concern for environmental issues, to promote sustainable development in sport and to require that the Olympic Games are held accordingly" (Olympic Charter, 2015, p. 18). This collective effort helped shape the mission, goals, and various policies that would encourage future Games to reduce their environmental impact while boosting the positive legacy for each subsequent Olympic Games. Individual sport federations, leagues, and clubs followed suit by concentrating on ways to decrease their environmental impacts. As the momentum of this movement continues to build, various regional organizations have been formed throughout the world to serve as a collective voice for sport organizations as they begin to develop environmental sustainability programs. These organizations include the Green Sports Alliance (North America), British Association for Sustainable Sport, Sports Environmental Alliance (Australia and New Zealand), and most recently, Sport and Sustainability International. Individually and collectively, these organizations bring sport professionals together to share best practices and new innovations to promote environmental sustainability within the sport industry.

Despite the initial collective efforts of the various organizations, the environmental sport movement is not without its frustrations and challenges. The Olympic Games have seen mixed results in their sustainability achievements with notable exceptions being the 2000 Sydney Games and 2012 London Games. Additionally, individual sport organizations have been slow to integrate environmental sustainability programs with measurable success as compared to their non-sport counterparts. For example, as of 2015, 81 percent of S&P 500 companies release an annual environmental sustainability report, whereas only a handful of sport organizations produce similar reports (see Chapter 9) (Governance & Accountability Institute, 2015). There is a hesitation on the part of sport managers to implement environmental sustainability initiatives (Pfahl, Casper, Trendafilova, McCullough, & Nguyen, 2015). Their reasons vary on why they refrain from engaging in such efforts and include concerns of upfront costs, unclear return on

investment, and lack of interest or support from within the organization or among fans (“Green’ Survey Results,” 2016).

Sport managers can overcome these challenges through collaboration with experts in sustainability who have practical knowledge or an analytical understanding of the integration of environmental sustainability with sport (Kellison & McCullough, 2016; McCullough, Pfahl, & Nguyen, 2016; Pfahl et al., 2015) and can assist sport managers in the development, integration, measurement, and refinement of environmental sustainability initiatives (Pfahl, 2011). Nevertheless, current and future sport industry professionals must understand sustainability, specifically environmental sustainability, and its value to the organization and the natural environment. For instance, like their non-sport counterparts, sport organizations and leagues have varying levels of understanding and even definitions of environmental sustainability and how their organization can address it. To this end, in the next section, we frame the term *environmental sustainability* and argue that environmental sustainability should be integrated throughout the sport industry and individual sport organizations.

Framing environmental sustainability

An exhaustive collection of research has been conducted focusing on sustainability consisting of three broad and encompassing constructs: environmental, social, and economic. These three concepts are not independent of each other but rather have an intersecting relationship. That is, environmental sustainability cannot be fully understood or examined independently. It is necessary to make both social and economic considerations when examining environmental sustainability. We specifically focus on environmental sustainability throughout this book; however, readers will note social and economic themes of sustainability emerging in individual chapters.

We argue that it is necessary to consider these various aspects, but it has been our experience that some practitioners try to quarantine or silo environmental sustainability into one department or charge one person within the organization to oversee a range of environmental sustainability initiatives. However, those efforts have fallen short. One such reason may be that obstacles to implementing environmental sustainability initiatives (i.e., lack of interest within the organization and among fans) remain because environmental sustainability is not fully understood, leveraged, and communicated within and by individual sport organizations to various internal and direct stakeholders. To this end, it is important to conceptualize the term sustainability, in general, and environmental sustainability, specifically.

As mentioned earlier, sustainability consists of three aspects: environmental, social, and economic. Other terms are used to describe these constructs and the concept of sustainability, including the “triple bottom line,” or planet, people, and profits (Kellison & Kim, 2014). Previous texts focusing on sport and the natural environment have traced their conceptualization of sustainability from the 1987 Brundtland Report, which was a product of the United Nations World Commission on Environment and Development. This conceptual definition, commonly used throughout this text, defines sustainability as meeting “the needs of the present without compromising the ability of future generations to meet their own needs” (para. 1). This definition is broad by design and should cause one to pause and contemplate how a sport organization can operationalize this definition.

It is important to separate the differences between being green and being sustainable. These two terms are not interchangeable although “green” and “sustainable” are oftentimes used as such. Green, or greening, refers to the environmental efforts of an organization or being environmentally responsible (Robertson, 2014). As Robertson notes, “greenness is a positive step, but not the ultimate goal” (p. 5). Ultimately, greening is the primary means to the sustainable ends

or, better put, greening is an initial step in understanding how to be sustainable. For instance, a sport organization can choose to implement a waste management program to divert recyclable and compostable waste from landfills, which is a common first-step initiative and a noteworthy effort (McCullough et al., 2016). It is common for sport organizations to publicize their diversion rates and the total tonnage of waste diverted from landfills over the course of a season. Yet a sustainable commitment to waste management initiatives should also focus on waste reduction, responsible sourcing, and educational programs, which should be included in such reports. That is, being less “bad” (i.e., diversion rates) rather than concentrating on a deeper examination of the processes and procedures of one’s organization to reduce its impact in the long term is green, but not necessarily sustainable.

Likewise, it is unrealistic to institute a set of rigid rules and regulations designed to counteract years of depleted resources and to restore ecosystems to conditions predating human interaction (Robertson, 2014). As a result, it is necessary to find a balanced solution to ensuring that environmental sustainability efforts are themselves sustainable. It may be useful to approach such efforts as any other strategic business decision to ensure its long-term success and overcome any reluctance to participation by various stakeholder groups (e.g., personnel, patrons/fans) (Etsy & Winston, 2009; Trail & McCullough, forthcoming). Environmental sustainability needs to be integrated into all aspects of the organization and not relegated to one person or department.

An integrated approach to environmental sustainability within the organization

Much like the relationship between the three prongs of sustainability, the relationship of each department within an organization is interrelated. As such, environmental sustainability programs and initiatives can be streamlined across various departments. This will not only increase the efficiency or function of the organization, but will also allow the organization to design more comprehensive programs that are deeply integrated into the organization, thereby boosting returns on investment and returns on organizational objectives (McCullough & Cunningham, 2010; McCullough et al., 2016). With this understanding, sport managers must be willing to integrate environmental sustainability across the organization and not limit it to one aspect of the organization (e.g., facility operations).

Previously, Chernushenko, van der Kamp, and Stubbs (2001) noted that simply a general “grasp of key environmental sustainability issues is only the tip of the iceberg” (p. 9). They suggested that sport managers who lack the awareness and knowledge of salient sustainability issues are not fully prepared to handle a dynamic environment such as in the sport industry. The authors go on to suggest that sport managers can turn to other industries for examples on how to approach and deal with various sustainability issues. Although we agree with this assessment, we would like to draw attention to the unique aspects of sport that differ from other industries, which may present problems for sport industry professionals who seek to integrate environmentally responsible practices into their organizations.

Sport management has established itself as its own academic discipline by taking theory and practical application of business strategy and adapting it to the specifics of the sport industry. Like Chernushenko and colleagues (2001) recommend, sport professionals can take examples from other industries and apply them within a sport organization to advance its sustainability efforts. Despite this recommendation, we caution practitioners and academics when applying to the sport industry what has been done in other industries concerning environmental sustainability. Practitioners and academics alike need to take into account the nuances of sport business involving the specific attributes of the organization’s location, customers (i.e., fans, patrons), and

organizational culture. Each organization is unique and there is not a one-size-fits-all approach to environmental sustainability in or out of the sport industry. We note the specific differences of the sport from other industries later.

Unlike traditional businesses that strive to sell tangible products (e.g., television, grocery item, cell phone), the sport industry is primarily focused on selling an emotional experience because the product “sold” to sport spectators is intangible. Sport managers try to sell the emotional experience that comes along with the unscripted drama of a sporting event. Thus, sport managers trying to sell tickets are in the business of creating an experience that fans or patrons will enjoy irrespective of the outcome of the game. These various dynamics and tertiary aspects of the event are added to create a larger spectacle to the initial pageantry of the event (e.g., pre-game festivities, tailgating, concessions, marching band). However, as more aspects or layers are added to the pageantry, so, too, are the environmental impacts associated with these layers.

Alternatively, sport participation does require tangible products to participate in a particular sport (e.g., skis, basketball), but an emotional experience or an intangible product is also being sold. When a family goes skiing, they seek an emotional experience, but tertiary purchases also go into that outing. They may purchase new equipment or clothing, but they are also traveling to a specific destination, staying in accommodations, and engaging in other activities that add to the overall experience of skiing. Thus, organizations in the business of spectator or participatory sport are challenged to integrate environmental sustainability into their organizational operations to reduce the environmental impact of their patrons, whether these patrons are spectators or participants.

A collective or strategic view is necessary to integrate sustainable practices into the fabric of an organization (Pfahl, 2011). Take, for example, a professional baseball team that is seeking to be environmentally sustainable by focusing on energy consumption and waste management. The organization can improve its energy efficiency by installing light-emitting diode (LED) lighting, reducing their energy consumption dramatically. Further, the organization can launch a waste management plan to divert waste from the landfill and ultimately reduce the amount of waste that is generated each game. The organization can have these initiatives, but without all organizational departments involved and a concerted effort to educate and engage fans, these initiatives will not be successful. So, although a facility operator may institute a new lighting and waste management plan, it is also necessary to involve all departments of the organization. The marketing department, for example, can create effective messaging to encourage fans to dispose of their waste properly. The public relations department can craft a series of press releases and news stories about the team’s efforts and progress of becoming an environmentally sustainable organization. The sponsorship department can identify and approach specific corporations that may reduce the cost and maintenance of new LED lighting systems. Unfortunately, many sport organizations are not taking such a comprehensive approach to engaging the entire organization in their environmental sustainability efforts. Thus, it is necessary for sport managers to rely on others to learn how to comprehensively design environmental sustainability campaigns to maximize the efforts and effects of these programs.

One such partner in this effort are research academics. Researchers have been working to better integrate environmental sustainability into the sport industry. Their theoretical approaches help provide a deeper understanding of how various aspects of a sport organization can better integrate environmental sustainability into the organization’s strategic planning, operations management, facility operations, marketing, and other departments. These approaches can also help current and future practitioners maximize their efforts to integrate environmental sustainability into their organization by having a conceptualization of the necessary steps to follow throughout the process. Far too often, it has been our experience that sport professionals, either

because of blissful ignorance or lack of time and resources, often implement initiatives using a trial-and-error approach or copy what another organization has done (i.e., memetic isomorphism). Although their attempts are welcomed, they may be more harmful than useful. The initiatives may benefit and reduce the organization's environmental impact, but without proper understanding of the nuances of what the organization is committing to, an unsuccessful attempt or attempts may result in upper management and the organization abandoning environmental initiatives altogether (Kellison & McCullough, 2016; McCullough et al., 2016).

About this book

The issues of sustainability and the natural environment are clearly front and center in both academic and wider societal discourse at the moment, and they are likely to remain indefinitely. As discussed earlier, the sport industry is not immune from discussions concerning the responsibility to reduce its impact on the natural environment. Given the unique aspects of the sport industry, the purpose of this book is to provide a comprehensive, multidisciplinary, and inclusive collection of work currently being conducted in sport, sustainability, and the environment. Because of the diverse perspectives offered by the book's contributors, readers will note a variety of both approaches to and positions on the topics discussed. Each chapter represents the view only of its author(s).

Section 1 of the book centers on foundational aspects of sport and environmental sustainability. In Chapter 1, we have framed the unique challenges of sport managers seeking to integrate a comprehensive and effective sustainability plan in their organizations. In Chapter 2, Mallen provides an exhaustive review of the academic research conducted on sustainability and sport to date. In Chapter 3, the economic implications of sport and sustainability are detailed by Sander-son and Shaikh. The ethical foundations for sustainability in sport are discussed by Rosenberg in Chapter 4, with sections related to various environmental programs and sustainable planning as a moral imperative. In Chapter 5, DeChano-Cook and Shelley consider the future of mega sporting events like the Olympic and Paralympic Games in light of forecasts related to climate change and rising sea levels. The first section concludes with Chapter 6, in which Dingle and Mallen outline the ways in which sport environmental sustainability education can be better integrated in academic curricula to equip future industry leaders with the skills necessary for addressing the grand challenge of environmental sustainability.

The second section of the book focuses on managerial (Chs. 7–9) and marketing (Chs. 10–14) aspects of sport and sustainability. In Chapter 7, Stevens contends that capacity building can better inform our understanding of how and why environmental sustainability change may occur in sport organizations. Lesjø and Gulbrandsen look in Chapter 8 at how sustainability became a prominent standard in the operations and management of the Olympic Games, and more broadly, they discuss the processes of institutionalization and standardization in organizations. In Chapter 9, Pfahl explores the ways in which sport organizations develop and communicate messages about environmental issues. Next, in Chapter 10, Trail and McCullough provide several original concepts for understanding how sport consumers respond to environmental messaging, including the Communications Strategy Wheel, Sustainability Campaign Pathway, and Sport Fan Sustainability Behavior Model. In Chapter 11, Huberty considers how sport organizations can leverage their sustainability initiatives to attract like-minded sponsors. Cornwell and Koenigstorfer complement this discussion in Chapter 12 by focusing on sponsorships from the food and drink industry. Edwards similarly explores sponsorship in Chapter 13, but he does so from the perspective of employees, highlighting the possibility that employees may respond in different ways to their employer acting with social responsibility toward various

stakeholders. In Chapter 14, Weiler and Weiler illustrate how a comprehensive branding strategy was used by the Vancouver 2010 Olympic Games Organizing Committee to promote a broader sustainability effort in the region.

In the third section, contributors discuss the challenges of implementing sustainability into facilities and the operations of sports organizations. In light of the fact that major sport events attract large numbers of consumers, in Chapter 15, Collins and Roberts assess and compare the economic and environmental impacts of three major sport events held in the UK. Next, Nguyen offers a summary of the various accreditations pursued by sport managers for their facilities and event operations in Chapter 16. In Chapter 17, Kaplanidou provides a clear illustration of how mega-event planning that focuses on the environment can result in positive changes in the quality of life among a host city's residents. The remaining chapters in this section are case studies in sustainability and operations: in Chapter 18, Theodoraki focuses on the role of the Commission for Sustainability London 2012 in assessing the environmental performance of the London Games, and in Chapter 19, Potteiger discusses the various strategies for implementing pro-environmental strategies within athletic training.

The fourth section relates to sustainability and sport event management. In Chapter 20, Heinze and Soderstrom use institutional theory to shed light on the changing nature of sports venues as they become more environmentally sustainable. In Chapter 21, Gillentine acknowledges the large environmental cost of sports fans' tailgating behaviors, and in Chapter 22, Casper and Bunds provide an analysis of the impact of tailgating on air quality. Finally, in Chapter 23, O'Brien and Ponting explore sustainability efforts in the sport of surfing by looking specifically at the case of STOKe Certified, the first sustainability management and accreditation system to be developed specifically for the surf tourism sector.

In the fifth section, authors use sociocultural approaches to critically analyze sport and sustainability. In Chapter 24, Johnson and Ali discuss greenwashing and the potential problems with the market-driven approach to environmentalism taken by some sport organizations. Next, in Chapter 25, Sharma-Brymer, Gray, and Brymer focus on sport participants and argue that participation in some sports can cultivate a deeper environmental identity and pro-environmental behaviors. Sartore-Baldwin extends the discussion of sustainability and sustainable development in Chapter 26 beyond the needs and interests of humans to incorporate the wants and needs of non-human animals. In Chapter 27, Bunds links water consumption with sport facilities, highlighting the problems that can arise from high water usage and the steps that can be taken to reduce consumption. In Chapter 28, Book illustrates how physical activity and sport in public spaces can serve as tools for making cities more sustainable.

In the final section of the book, contributors focus on law and governance. In Chapter 29, Porteshawver examines the application of environmental law and regulation to sport stadium construction and operation. Geereart shifts the focus to the European Union in Chapter 30, where he explores the implementation and impact of environmental objectives in EU sports policy. Next, in Chapter 31, Girginov investigates the governance of environmental sustainability in the 2012 London Olympic and Paralympic Games. In Chapter 32, Bodie and Jackson discuss the growth of pro-environmental initiatives in major American sports leagues. The section concludes with Chapter 33, where Holden and McLeod propose an innovative method to evaluate new stadium proposals by utilizing ecological economics and law.

We close with the epilogue, where we assess the current state of sport and the environment and provide our perspective on the future of sustainability in sport.

The Routledge Handbook of Sport and the Environment is a comprehensive and interdisciplinary guide that presents, details, critiques, and celebrates sport's widespread response to calls for environmental sustainability. Although initial efforts within the industry are noteworthy, a deeper

understanding of challenges and opportunities is needed to improve and maximize the benefits of implementing sustainability programs from environmental, economic, and social perspectives. In this text, we work to enhance this understanding, address current issues, and raise additional questions with the aim of driving sustainability in sport forward.

References

- Chernushenko, D., van der Kamp, A., & Stubbs, D. (2001). *Sustainable sport management: Running an environmentally, socially and economically responsible organization*. Ottawa: UNEP.
- Esty, D., & Winston, A. (2009). *Green to gold: How smart companies use environmental strategy to innovate, create value, and build competitive advantage*. Hoboken, NJ: John Wiley & Sons.
- Governance & Accountability Institute. (2015). *Eighty one percent (81%) of the S&P 500 index companies published corporate sustainability reports in 2015* [Report]. Retrieved from www.ga-institute.com/nc/issue-master-system/news-details/article/flash-report-eighty-one-percent-81-of-the-sp-500-index-companies-published-corporate-sustainabi.html
- 'Green' survey results. (2016, June 6). *SportsBusiness Journal*. Retrieved from www.sportsbusinessdaily.com/Journal/Issues/2016/06/06/In-Depth/Survey.aspx
- Kellison, T. B., & Kim, Y. K. (2014). Marketing pro-environmental venues in professional sport: Planting seeds of change among existing and prospective consumers. *Journal of Sport Management*, 28(1), 34–48.
- Kellison, T. B., & McCullough, B. P. (2016). A forecast for the mainstreaming of environmental sustainability. *Sport & Entertainment Review*, 2(1), 11–18.
- McCullough, B. P., & Cunningham, G. B. (2010). A conceptual model to understand the impetus to engage in and the expected organizational outcomes of green initiatives. *Quest*, 62(4), 348–363. doi: 10.1080/00336297.2010.10483654
- McCullough, B., Pfahl, M., & Nguyen, S. (2016). The green waves of environmental sustainability in sport. *Sport in Society: Cultures, Commerce, Media, Politics*, 19(7), 1040–1065.
- Pfahl, M. (2011). *Sport and the natural environment: A strategic guide*. Dubuque, IA: Kendall Hunt Publishing Company.
- Pfahl, M., Casper, J., Trendafilova, S., McCullough, B. P., & Nguyen, S. N. (2015). Crossing boundaries: An examination of sustainability department and athletics department collaboration regarding environmental issues. *Communication and Sport*, 3(1), 27–56.
- Robertson, M. (2014). *Sustainability principles and practice*. New York, NY: Routledge.
- Sartore-Baldwin, M. L., McCullough, B. P., & Quatman-Yates, C. (2016). Shared responsibility and issues of injustice and harm within sport. *Quest*, Advanced online publication. doi:10.1080/00336297.2016.1238769
- Trail, G. T., & McCullough, B. P. (forthcoming). Marketing Sustainability through Sport: Testing the Sport Participant Sustainability Behavior Model. 1–17.

2

ROBUSTNESS OF THE SPORT AND ENVIRONMENTAL SUSTAINABILITY LITERATURE AND WHERE TO GO FROM HERE

Cheryl Mallen

The safeguarding of the natural environment, or environmental sustainability, is a serious contemporary challenge, and sport cannot be exempted from its part in developing understandings of the issues and solutions. In this chapter, the definition of environmental sustainability follows the United Nations (UN) Brundtland Report (1987) as the safeguarding of the natural environment for future generations. Further, this chapter supports the scientific position that climate change is occurring throughout our world and the associated changes have the potential to affect sport (UNEP, 2007).

Within sport management, however, the environmental sustainability research literature has not yet been fully explored and is noted as being in its “infancy” (Walker & Parent, 2010, p. 199) stage or to be “embryonic” (Kellett & Turner, 2010, p. 154). The aim of this chapter is twofold. First, it is to outline the research that has been completed on sport and environmental sustainability. This research literature is the cornerstone of what is known and acts as a base to underscore future research. Second, it is to encourage academics and graduate students to take the challenge of advancing research on the topic.

This chapter extends the systematic content analysis of a sport-related journal sampling conducted by Mallen et al. (2011) that revealed the sport and environmental sustainability manuscripts published from 1987–2008. This chapter completes the systematic content analysis from 2009–2015. The combination of this chapter, along with the Mallen et al. (2011) work, represents the most comprehensive content analysis of environmental sustainability research in a sport-related journal sample.

The journals examined, along with the number of manuscripts found in each journal, are now presented:

Sport Management Review – 15 manuscripts

European Sport Management Quarterly – 7 manuscripts

Event Management: An International Journal – 7 manuscripts

Journal of Sport and Tourism – 5 manuscripts

International Journal of Sport Management and Marketing – 4 manuscripts
Journal of Sport Management – 4 manuscripts
Journal of Sport and Social Issues – 3 manuscripts
Sport in Society – 2 manuscripts
International Review for the Sociology of Sport – 2 manuscripts
International Journal of Sports Management – 1 manuscript
International Journal of Sports Marketing and Sponsorship – 1 manuscript
Journal of Sports Economics – 1 manuscript
Sport Management Education Journal – 1 manuscript
International Journal of Sport Finance – 0 manuscripts
Journal of the Philosophy of Sport – 0 manuscripts
Journal of Sport Behavior – 0 manuscripts
Sociology of Sport Journal – 0 manuscripts
Journal of Hospitality, Leisure, Sport and Tourism Education – 0 manuscripts
International Sports Law: Pandektis – 0 manuscripts
Sport History Review – 0 manuscripts
Sport Marketing Quarterly – 0 manuscripts

The journals listed here were examined for the period from January 1, 2009, to December 31, 2015. It is important to note that there were manuscripts in the journals that discussed areas such as corporate social responsibility along with sustainability, and these topics can potentially include environmental sustainability; however, unless the focus of each manuscript involved environmental sustainability, it was not included in this chapter.

The following publications on sport and environmental sustainability published from 2009–2015 are now presented and listed by the publication year and organized within the same two themes and six subthemes as utilized by Mallen et al. (2011):

Theme 1: environmental management performance

Subtheme 1: Introduction to ES

Study: Ponting and O'Brien (2015)

Topic: the regulation of sport and recreation outdoor sites to manage crowding and safeguard the site

Theoretical Bases: surf tourism theory

Constructs: “the politics of surf tourism recreational capacity management” (p. 99); or “the level of use . . . for which a natural resource can sustain without an unacceptable degree of deterioration” (p. 99)

Methods: qualitative interviews; participant observations

Setting: the host community for the surfing area at Indonesia’s Mentawai Islands

Rationale for Conducting Study in Sport: crowding needs to be addressed with respect to outdoor sport and recreation

Generalizability: “There appear to be immediate advantages for government and local communities in incentivizing low-volume, high-yield land-based surf tourism development, and social carrying capacity measures such as vocational training and cultural interchange emerge as viable adjuncts to purely physical carrying capacity regulation” (p. 99)

Study: Djaballah, Hautbois, and Desbordes (2015)

Topic: social impacts of city sport events

Theoretical Bases: strategic sense making

Constructs: positive and negative non-mega sport event perceptions

Methods: interviews

Setting: French city officials

Rationale for Conducting Study in Sport: “The literature investigating non-mega sport events’ social impacts remains limited” (p. 48)

Generalizability: “Results show that while they perceive more positive than negative impacts, they are nonetheless proportionally more involved in the management of negative aspects” (p. 48)

Study: Fairley, Ruhanen, and Lovegrove (2015)

Topic: pond hockey tournaments and climate change

Theoretical Bases: sustainability theory

Constructs: climate change; implications and challenges of unstable and unpredictable weather conditions

Methods: educational case study

Setting: The Pond Hockey Classic held in New Hampshire, Vermont, Montana, New York, and Philadelphia, United States

Rationale for Conducting Study in Sport: “Pond hockey is the foundation upon which modern day ice hockey was built” (p. 618)

Generalizability: “Research on climate change commonly suggests that individuals, organizations and systems can adapt to, or mitigate against, climate change” (619)

Study: Harris (2014)

Topic: large-scale sporting events (LSSEs) and education for sustainable development (EfSD) from the perspective of the host communities

Theoretical Bases: stakeholder theory

Constructs: EfSD stakeholders, initiatives, programs, beneficiaries, impact factors, and legacies

Methods: case study; explorative interviews

Setting: Sydney 2000 Olympic Games

Rationale for Conducting Study in Sport: when it comes to environmental sustainability, “education plays a central role to humanity’s response” (p. 208)

Generalizability: “the process of EfSD. . . [was] dominated by the government sector; involve a diverse range of programs and initiatives; largely of an informal educational nature” (p. 207)

Study: Kellison and Kim (2014)

Topic: the triple bottom line’s (TBL) “appropriateness as a reflection of proenvironmental organizations’ motives” (p. 34).

Theoretical Bases: sustainability theory

Constructs: the TBL of social, environmental and economic outcomes; “sport as an instrument of environmental awareness” (p. 36)

Methods: qualitative field research; interviews with professional sport administrators

Setting: professional sport organizations

Rationale for Conducting Study in Sport: “In recent years, corporate sustainable design initiatives have emerged and gained popularity in response to amplified awareness of the environmental impact of everyday life” (p. 34)

Generalizability: “This study contends that the TBL’s three components are closely intertwined, and that implementation of commercial and social marketing strategies is necessary to attend to and realize the organization’s stated goal of maximizing all three components” (p. 34)

Study: Liu, Broom, and Wilson (2014)

Topic: legacy of the Olympic Games held in Beijing

Theoretical Bases: social exchange theory

Constructs: environmental protection; exploratory factor analysis

Methods: empirical, survey

Setting: residents of Shanghai, China

Rationale for Conducting Study in Sport: “The examination of residents, and non-residents, perceptions of mega-event impacts can be beneficial as they have the opportunity to reveal the real magnitude of any event legacy” (p. 486)

Generalizability: “The level of perceived legacy was significantly above the mid-point on all of the dimensions” (p. 485)

Study: Phillips and Turner (2014)

Topic: impact restrictions for water use on sport

Theoretical Bases: sustainability theory

Constructs: water usage, water management, sport water management in times of a water crisis

Methods: case study; for classroom use

Setting: Australia

Rationale for Conducting Study in Sport: many countries around the world are facing severe droughts

Generalizability: “The issues associated with the local Council and Water Management Corporation . . . And the sport organisations in coming to agreement on how the water crisis was to be managed is illuminated throughout this case” (p. 376)

Study: MacIntosh, Apostolis, and Walker (2013)

Topic: environmental responsibility (ER) of a mountain ski resort

Theoretical Bases: sustainability theory

Constructs: resort ER communications to consumers; consumer attitudes and expectations

Methods: mixed-methods; content analysis; semi-structured interviews

Setting: one mountain ski resort in Quebec, Canada

Rationale for Conducting Study in Sport: “Mountain resorts that offer winter sporting opportunities are facing sustainability issues ranging from public criticisms to the deterioration of the natural environment” (p. 99)

Generalizability: “Communicating organizational activities to the consumers was reported in this study by managers as problematic due to fears of green-washing and public backlash” (p. 114)

Study: Shalini and Stubbs (2013)

Topic: environmental legacies of Olympic Games

Theoretical Bases: interpretivist approach; sustainability theory

Constructs: environmental aspects/impacts

Methods: multiple case studies; interviews of key stakeholders of Olympic Games

Setting: Olympic Games in 2008 (Beijing) and 2012 (London); Youth Olympic Games in 2010 (Singapore)

Rationale for Conducting Study in Sport: “The impacts of mega-spectator events can be significant and numerous” (p. 486)

Generalizability: “The research also found that the uniqueness of each host city is significant in generating green legacies” (p. 492)

Study: Agha, Fairley, and Gibson (2012)

Topic: understanding the types of Olympic Games legacies

Theoretical Bases: legacy theory

Constructs: social, financial and environmental legacies

Methods: case study for classroom use

Setting: actual Olympic city is anonymous so that it can be adapted to any Olympic host city

Rationale for Conducting Study in Sport: a classroom aid for “sport tourism, stakeholder management, event management or sport economics and finance” (p. 125)

Generalizability: “1. Conceptualizing appropriate legacy goals for a community with specific stakeholders and stakeholder objectives, 2. Analyzing the ability of the Olympics to meet the stated legacies for image, tourism, venues, social change, and economic gains, 3. Determining whether bidding for and staging the Olympics is the right decision for a local community, and 4. Developing action plans for generating promised legacies or what is called legacy momentum” (p. 126)

Study: Casper and Pfahl (2012)

Topic: student perspectives on the safeguarding of the natural environment

Theoretical Bases: sustainability theory

Constructs: awareness, knowledge and a modified value-belief-norm framework

Methods: a web-based quantitative survey; structural equation modeling

Setting: U.S. higher education students at a football game that was promoted as ‘green’

Rationale for Conducting Study in Sport: “As with all other aspects of life, sport and recreation activities are inextricably connected to the natural environment” (p. 8)

Generalizability: “The results indicate that the educational intervention nature of the *Green Game* was effective in influencing the behavioral intentions of the sport fans suggesting that the setting of a sporting event as an effective medium to education university stakeholders on environmental issues” (p. 85)

Study: Hall (2012)

Topic: interpretations of event sustainability

Theoretical Bases: sustainability theory

Constructs: economic sustainability, balanced sustainability, and steady-state sustainability

Methods: discussion

Setting: mega-events

Rationale for Conducting Study in Sport: “The concept of sustainability is now integral to the lexicon of tourism and is increasingly becoming part of the discourse of mega-events” (p. 119)

Generalizability: “It argues that mega-events focused on economic or balanced sustainability are actually not sustainable at all . . . instead, a steady-state approach to sustainability is required” (p. 120)

Study: Inoue and Kent (2012a)

Topic: explains “the process of how a sport team could induce consumers to engage in pro-environmental behavior” (p. 417)

Theoretical Bases: the internalization perspective

Constructs: “intention to support the team’s environmental initiative and intention to engage in proenvironmental behavior in daily life” (p. 417)

Methods: quantitative, undergraduate, and graduate student survey

Setting: higher education sport

Rationale for Conducting Study in Sport: “There is growing concern about the significant damage that sport can cause to the natural environment” (p. 417)

Generalizability: “Once internalization takes place, consumers are likely to show their intention to support the team’s environmental initiative and formulate their intentions to perform daily proenvironmental behavior” (p. 428)

Study: Inoue and Kent (2012b)

Topic: the influence of sport organizations on voluntary environmental behavior

Theoretical Bases: social influence; effective messaging

Constructs: “consumer responses to environmental initiatives by two professional sports teams” (p. 330)

Methods: survey of recipients of an electronic sports newsletter

Setting: two professional sport teams in Philadelphia, United States

Rationale for Conducting Study in Sport: “to understand how professional sport organizations might influence consumer voluntary behavior through their corporate social marketing” (p. 330)

Generalizability: “environmental credibility . . . was found to have a positive association with pro-environmental behavior measured by daily recycling involvement and recycling intentions during the teams’ home games” (p. 330). Further, “professional sport organizations can be an effective vehicle for socially beneficial behavior by increasing their credibility in CSM [corporate social marketing] involvement” (p. 330)

Study: Karadakis and Kaplanidou (2012)

Topic: legacy perceptions by residents of an Olympic Games

Theoretical Bases: social exchange theory

Constructs: personal attitudes to the hosting of Olympic Games of environmental, economic and socio-cultural legacies

Methods: telephone survey

Setting: residents of Vancouver and Ottawa, Canada

Rationale for Conducting Study in Sport: there are direct resident impacts from the hosting of an Olympic Games

Generalizability: during the pre-event phase, the “environmental legacies did not perform to expectations” (p. 252)

Study: Kellison and Mondello (2012)

Topic: the contentious debate and referendums concerning the subsidization of sport facilities

Theoretical Bases: organizational perception theory

Constructs: the desired voting outcome framework and “sport as an instrument of social change” (p. 504)

Methods: examination of four hypotheses

Setting: communities in which a sport facility is to be built

Rationale for Conducting Study in Sport: to develop understandings concerning “the perceived influence of an environmentally friendly facility on organizational reputation” (p. 507) when seeking support for building a new sport facility

Generalizability: “effective organizational perception management can interrupt anticipated no-voters’ decision-making processes, leading to a reconsideration of voters’ judgments” (p. 500)

Study: Mallen and Chard (2012)

Topic: the potential of an environmental transformation of sport facilities

Theoretical Bases: precautionary principle; appreciative theory

Constructs: creation of a vision of the future in sport environmental sustainability; UNEP Global Outlook 4 (GEO4); Summary for Decision-Makers; Sustainable Value Framework

Methods: qualitative; conceptual

Setting: Canadian major sport facility industry

Rationale for Conducting Study in Sport: there is a need to determine the meaning of sport facility environmental sustainability

Generalizability: “It is hoped that the vision presented spawns debate on sport facility ES” (p. 230)

Study: Dickson, Benson, and Blackman (2011)

Topic: a review of literature on sport event legacies and presentation of a future research framework

Theoretical Bases: communication theory

Constructs: the “complex range of dimensions associated with legacies over time and place” (p. 286)

Methods: descriptive, content analysis of literature

Setting: the sport literature on event legacies; the Olympics and Paralympics

Rationale for Conducting Study in Sport: “As countries prepare bids to host mega sporting events such as the Olympic and Paralympic Games, one of the justifications communicated to local communities is associated with the legacies or benefits that will be left for the host communities” (p. 285)

Generalizability: “Despite legacies being such a significant part of the bid, marketing and planning process, the research that critically evaluates those legacies beyond the Games has not kept pace with the discourse” (p. 299)

Study: Fairley, Tyler, Kellett, and D’Elia (2011)

Topic: value of a motorsport event when a hosting licensing fee must be paid

Theoretical Bases: stakeholder relationship, management theory

Constructs: government public financial support for a motorsport event

Methods: case study; triple bottom line approach

Setting: Melbourne Australia Formula One Grand Prix

Rationale for Conducting Study in Sport: case study to support student debates on event financial, social, and environmental perspectives

Generalizability: “The mixed economy of sport events requires a greater articulation to understand the complexity of commercial, government and not-for-profit stakeholder, and collaborators among them” (p. 144)

Study: Hvenegaard (2011)

Topic: wildlife festivals

Theoretical Bases: ecotourism theory

Constructs: conservation benefits

Methods: discussion

Setting: local natural wildlife

Rationale for Conducting Study in Sport: “As ecotourism activities, wildlife festivals should also promote conservation goals” (p. 373)

Generalizability: “Festival activities can enhance conservation through economic, social, and political means” (p. 382)

Study: Jin, Mao, Zhang, and Walker (2011a)

Topic: relationship between athletic donors’ beliefs, attitudes, norms control and intentions in environmental sustainability initiatives at sport stadiums

Theoretical Bases: theory of reasoned action

Constructs: beliefs: behavior, normative, control; attitudes, perceived behavior control, behavior intentions

Methods: survey, quantitative

Setting: university students, Florida, United States

Rationale for Conducting Study in Sport: “The world is facing immense environmental challenges in terms of climate change, pollution, and diminishing biodiversity” (p. 122)

Generalizability: no previous research has examined donor behavior based on environmental conservation at stadiums

Study: Jin, Zhang, Ma, & Connaughton (2011b)

Topic: perceptions of the Olympic Games

Theoretical Bases: theory of reasoned action

Constructs: “perceived environmental impact, attitude, behavioral intentions and actual behavior” (p. 275)

Methods: quantitative, questionnaire

Setting: residents in Beijing, China during the Olympic Games

Rationale for Conducting Study in Sport: “The Olympic Games involve colossal environmental resources, activities, and construction projects that might disturb the host cities’ natural environment” (p. 275)

Generalizability: “By comparing the environmental situation in 2001 when Beijing was selected as the host city of the 2008 Olympic Games, respondents were most likely to

agree that hosting the Olympic Games contributed to improved air quality and water quality, better use of energy, more convenient public transportation, higher rate of green coverage, enhanced management of industrial pollution and solid waste, and better environmental education” (p. 292)

Study: Mallen and Chard (2011)

Topic: eight key debate questions are provided concerning sport and environmental sustainability

Theoretical Bases: environmental citizenship; appreciative theory

Constructs: paradoxes, uncertainties, constraints, and tradeoffs in sport environmental sustainability

Methods: qualitative description of “the environmental effect” (p. 431)

Setting: sport and the natural environment

Rationale for Conducting Study in Sport: “This manuscript was designed to encourage energetic debate among sporting scholars” (p. 424)

Generalizability: “It is now up to the members within the sport academy to determine the extent of the debate, the visions conceived, strategies designed for managing paradoxes, uncertainties, trade-offs, environmental advances and if there will be a race to enact the visions” (p. 431)

Study: Mallen, Stevens, and Adams (2011)

Topic: what environmental sustainability (ES) literature in a sport-related journal sample

Theoretical Bases: sustainability theory

Constructs: environmental management performance

Methods: content analysis of sport journals on environmental sustainability

Setting: literature in the sport academy

Rationale for Conducting Study in Sport: sport management literature is behind the management literature advancing on environmental sustainability

Generalizability: “In the context of the environmental threat raging in the world, the paucity of literature in sport and ES is disappointing” (p. 253)

Study: McCullough and Cunningham (2011)

Topic: predicting recycling intentions

Theoretical Bases: theory of planned behavior

Constructs: “recycling behavior, attitudes, subjective norms, perceived behavioural control, and intentions to recycle” (p. 108)

Methods: quantitative, questionnaire

Setting: youth baseball

Rationale for Conducting Study in Sport: “the green movement has gained momentum” (p. 104)

Generalizability: “Interestingly, attitudes towards recycling and perceived behavioural control were not significantly associated with recycling intentions” (p. 115)

Study: Paquette, Stevens, and Mallen (2011)

Topic: Olympic Games bid environmental promises and actualities

Theoretical Bases: interpretations of environmental sustainability at Olympic Games

Constructs: sustainability theory

Methods: qualitative document analysis; Raufflet's model of corporate environmental management

Setting: the International Olympic Committee; 1994–2004 Olympic Games Organizing Committees (OCOGs)

Rationale for Conducting Study in Sport: "During the past two decades the International Olympic Committee (IOC) has established several policies and programmes related to environmental sustainability (ES). Its actions reflect a broader trend of environmentalism within economic and social spheres around the world" (p. 355)

Generalizability: There is "incongruence between the IOC and OCOGs" (p. 362) with respect to the transition between the Olympic bid phase and organizing committee phase whereby the organizing committee was not obligated to implement bid promises concerning environmental sustainability

Study: Cheng and Jarvis (2010)

Topic: how the 2008 Formula 1 Grand Prix in Singapore "impacted its host residents" (p. 91)

Theoretical Bases: social exchange theory

Constructs: event attendance, interest, frequency of access to the vicinity of the race circuit, and reason for access

Methods: mixed methods, survey, convenience sampling

Setting: Singapore residents

Rationale for Conducting Study in Sport: there has been a shift towards determining event social-cultural impacts

Generalizability: event environmental issues involved noise, traffic management, and crowding. "Three other points made by respondents referred to promoting the event more intensively to the general public/locals, engaging the them in more ways, and lowering ticket prices" (p. 104)

Study: Kellett and Turner (2010)

Topic: the sport industry's responsibility concerning water management at the community level

Theoretical Bases: sustainability theory

Constructs: sustainable water management in sport and recreation

Methods: case study

Setting: Australian sport; one local municipal council

Rationale for Conducting Study in Sport: "Globally, water is becoming an increasingly scarce resource and effective and efficient management of it is complex due to increasing population, increasing pollution, poor governance, and inefficient investment in infrastructure" (p. 142)

Generalizability: "Sustainable water management in the sport and recreation sector is embryonic" (p. 154)

Study: Konstantaki and Wickens (2010)

Topic: Olympic host city residents' perceptions

Theoretical Bases: sustainability theory

Constructs: environmental impacts; security risks

Methods: survey questionnaire; content analysis

Setting: 2012 London Olympic Games

Rationale for Conducting Study in Sport: “Little attention is paid to careful consumption of the natural environment in preparation of Olympic Games” (p. 338)

Generalizability: “The findings of this study showed that the majority of respondents . . . supported the London 2012 Olympic Games and were relatively aware of the 2012-related publicity, however there were notable differences between the groups in their perceptions of environmental impacts and security risks. Overall, the young respondents demonstrated more positive attitudes compared with older respondents” (p. 353)

Study: Limehouse, Melvin, and McCormick (2010)

Topic: the willingness of golfers to pay for environmental sustainability aspects

Theoretical Bases: environmental sustainability theory

Constructs: 100 golf course variables; Audubon International Cooperative Sanctuary Program; environmental certification

Methods: analysis of Sportometrics golf course database

Setting: 15,000 U.S. golf courses

Rationale for Conducting Study in Sport: “The working idea is that golfers or external third parties want golf courses to be more environmentally conscious” (p. 262)

Generalizability: “We argue that the results of this analysis show that there is a real demand for environmental quality on golf courses” (p. 279)

Study: Ponsford and Williams (2010)

Topic: relationships concerning the construction of an Olympic Games venue with a focus on holistic sustainability (social, economic and environmental)

Theoretical Bases: Giddens’s theory of social structuration; stakeholder theory

Constructs: evolution of relationships in venue development; corporate environmentalism

Methods: qualitative

Setting: construction of Cypress Olympic Venue for the Vancouver 2010 Olympic Games

Rationale for Conducting Study in Sport: “Olympic Games often require organizing committees to construct major sport venues” (p. 17)

Generalizability: due to skepticism for Olympic organizers concerning venue development, this paper promotes the need to develop community/corporate relationships via a “social license”

Study: Walker and Parent (2010)

Topic: social responsibility, responsiveness, corporate citizenship

Theoretical Bases: social responsibility theory

Constructs: “propose an integrated model of social involvement” (p. 198) that includes environmental initiatives

Methods: qualitative analysis

Setting: sport organizations websites

Rationale for Conducting Study in Sport: “Social involvement research in sport management is in its infancy” (p. 199)

Generalizability: “We conclude that social involvement varies considerably in the sport industry and this variation can be partially explained by geographical reach, stakeholders’ influences,

and business operation of the organizations” (p. 198). “This study illustrates that sports teams, leagues and organizations are very active in reporting social involvement” (p. 210)

Study: Brymer, Downey, and Gray (2009)

Topic: relationship of the natural environment in extreme sports

Theoretical Bases: sustainability theory

Constructs: ecopsychology; sustainability

Methods: interviews

Setting: veteran participants of extreme sports

Rationale for Conducting Study in Sport: there is a “relationship of athletes to the natural world” (p. 196)

Generalizability: “Participants speak about an experience of intimate connection to the landscape or nature . . . This research reveals that extreme sports may act as a precursor to undertaking environmentally sustainable practices” (p. 202)

Study: Mansfield (2009)

Topic: environmentalism and exercise, activity holidays, and health spas; the sport and fitness cultures

Theoretical Bases: social justice theory; ecological politics

Constructs: environmentalism, ecologism, consumptism

Methods: descriptive

Setting: the United Kingdom

Rationale for Conducting Study in Sport: “there is . . . a growing awareness of the potential ecological threat posed by the continued and unmanaged economic growth and development of sport and fitness cultures” (p. 354)

Generalizability: there is an environmentalist approach that tends to lead to green consumerism; “a position heavily criticized by ecologists” (p. 359)

Study: Mincyte, Casper, and Cole (2009)

Topic: “What happens when sport meets nature?” (p. 103)

Theoretical Bases: sustainability theory

Constructs: An overview on a special issue on sports and environmental politics

Methods: discussion

Setting: sport and its environments

Rationale for Conducting Study in Sport: “Today we are faced with environmental issues of global proportions such as climate change, pollution, conflicts over water rights and land use, major shifts in ecosystems, and nature resource depletion” (p. 104)

Generalizability: There are “tensions and contradictions between private and public spaces, between ‘free’ and ‘disciplined’ sporting bodies, between sport for play and sport for profit, between indoor and outdoor sporting environments, between built and unfettered landscapes, between economic development and social justice, and between institutions and people” (p. 110)

Study: Schaffner (2009)

Topic: birding as a green sport

Theoretical Bases: environmental sustainability theory

Constructs: history of birding as an environmental sport; toxic encounters

Methods: descriptive

Setting: the World Series of Birding and Environmental Protection Agency (EPA) Superfund sites; bid-year birding; landfills; sewage ponds

Rationale for Conducting Study in Sport: “The playing fields of competitive birding are toxic” (p. 206)

Generalizability: “What an examination of birding shows, ultimately, is that some of the more conservative forms of contemporary environmentalism, based largely on fund-raising strategies, are implicated in perpetuating ongoing aspects of environmental degradation . . . birding . . . is allowed to maintain a myopic, partial approach to dealing with the troubling relationship between human pollution and the environment” (pp. 224–225)

Study: Tranter and Lowes (2009)

Topic: health intersects with motorsport

Theoretical Bases: communication theory; public health theory

Constructs: economic health, environmental health (or ecological sustainability and public health)

Methods: descriptive

Setting: Australian motorsport events

Rationale for Conducting Study in Sport: “There is a near universal acceptance across a range of societies of the ideology that ‘sport is good for you’” (p. 150)

Generalizability: “We argue that an examination of environmental issues is central to the understanding of health outcomes of sporting events” (p. 151)

Subtheme 2: Environmental activities in stakeholder disclosure and relationships; *factors:* disclosure of environmental activities, quantification and comparability of disclosed data, disclosure methods, and relations developed for environmental purposes

Study: Kellison and Hong (2015)

Topic: the advance of pro-environmental aspect within major

Theoretical Bases: Rogers’ diffusion of innovation framework

Constructs: pro-environmental adopters; influences; factors

Methods: qualitative; interviews with architects of eco-friendly sport facilities

Setting: major sport facilities in Europe

Rationale for Conducting Study in Sport: there is an “increasing awareness of the intersection of sport and the environment” (p. 249)

Generalizability: “The primary incentives for owners and quasi-owners to adopt sustainable designs were economic savings over the life of the facility, perception-management opportunities, and demonstration of their innovativeness” (p. 249)

Study: McCullough, Pfahl, and Nguyen (2016)

Topic: “similarities of environmental sustainability efforts through organizational learning” (p. 1)

Theoretical Bases: institutional theory; diffusion of innovation

Constructs: “a conceptual framework surrounding the typology of environmental sustainability efforts made within the sport industry” (p. 1)

Methods: conceptual

Setting: sport organizations and leagues

Rationale for Conducting Study in Sport: sport can be seen “as a reflection and facilitator of social changes” (p. 2)

Generalizability: The manuscript classified “the efforts of sport organizations into waves of sport environmental sustainability efforts and important implications arising from them” (p. 1)

Study: Mair (2014)

Topic: events and the promotion of environmental behaviours

Theoretical Bases: sustainability theory

Constructs: environmental initiatives (such as recycling, water conservation, use of recycled materials, environmental signage and others)

Methods: online panel survey

Setting: music festivals

Rationale for Conducting Study in Sport: “Climate change is an ongoing issue for governments internationally, driving them to seek more ways in which to encourage the general public to engage with the sustainability agenda” (p. 421)

Generalizability: “The findings of this study suggest that relatively low numbers of attendees were aware of any overt [environmental] messages at the music festivals they attended, with few exceptions” (p. 428)

Study: Nguyen, Trendafilova, and Pfahl (2014)

Topic: environmental sustainability programs in baseball

Theoretical Bases: resource-based view and the natural resource-based view, grounded theory

Constructs: resource management and stakeholder engagement strategies, constraints and factors facilitating program objectives

Methods: qualitative case study

Setting: Major League Baseball (MLB)

Rationale for Conducting Study in Sport: “It is evident that environmental concerns and sustainability issues are at the top of the agenda for many sport organizations” (p. 485)

Generalizability: Three key areas were promoted that stemmed from the results of this study, including developing actions that are strategic, mitigating constraints on the actions, and devising a holistic approach

Study: Trendafilova and Babiak (2013)

Topic: North American professional sport and their interaction with the natural environment

Theoretical Bases: sustainability theory; corporate social responsibility

Constructs: positioning and deployment of environmental practices; conceptual framework using five dimensions: centrality, specificity, proactivity, volunteerism, and visibility

Methods: semi-structured interviews

Setting: North American professional sport team and league executives, consultants, non-profit and partner groups

Rationale for Conducting Study in Sport: “In a global society that is increasingly aware of ecological degradation and harm caused by businesses, green sports offer teams, leagues and partner companies the opportunity to enhance their images environmentally friendly players” (p. 21)

Generalizability: “Given the demand from customers and fans for environmentally friendly options and alternatives, professional sport teams can consider developing relationships and establishing long term partnerships with industry experts, particularly in the field of recycling and the development of energy and water-efficient technologies” (p. 22)

Study: Trendafilova, Babiak, and Heinze (2013)

Topic: “how environmental management practices are being diffused in professional sport organizations” (p. 298)

Theoretical Bases: institutional theory

Constructs: team and league sport executives, websites and documents, including media reports

Methods: qualitative, interviews, content analysis

Setting: North American professional sport teams and leagues

Rationale for Conducting Study in Sport: sought to understand the drivers, constraints, and areas of focus in sport social responsibility

Generalizability: “Media played a role in driving and defining the type and extent of involvement in professional sports’ teams environmentally sustainability efforts” (p. 298)

Study: Casper, Pfahl, and McSherry (2012)

Topic: the role of American intercollegiate environmental sustainability

Theoretical Bases: sustainability theory

Constructs: awareness levels and concern for environmental issues, strategies, and practices

Methods: quantitative survey

Setting: athletic departments for American National Collegiate Athletic Association (NCAA) football universities

Rationale for Conducting Study in Sport: relationship between sport and sustainability is an unknown

Generalizability: “There is a disconnect between concern and action perhaps due to a lack of communication between the athletic department and the general university cost concerns, and a lack of knowledge about sustainability initiatives” (p. 11)

Study: Gibson, Kaplanidou, and Kang (2012)

Topic: examination of “six small-scale sports events and the work of a local sports commission in the context of the three pillars of sustainability: economic, social and environmental” (p. 160)

Theoretical Bases: sustainability theory

Constructs: the three pillars of sustainability: social, economic, and environmental

Methods: onsite and online survey method

Setting: the Gainesville Sports Commission in Gainesville, Florida

Rationale for Conducting Study in Sport: concerns for the efficacy of sport events

Generalizability: “small-scale sports event portfolio consistent with a communities’ infrastructure and human and cultural capital may be a viable form of sustainable tourism development” (p. 160)

Study: Spector, Chard, Mallen, and Hyatt (2012)

Topic: “to examine the safeguarding of the natural environment, or environmental sustainability (ES) in sport by studying the level of environmentally responsible actions” (p. 416)

Theoretical Bases: social constructionism

Constructs: ski resorts, their websites environmental communications and polity

Methods: qualitative analysis of 82 ski resort websites

Setting: U.S. ski resorts

Rationale for Conducting Study in Sport: skiing impacts the natural environment

Generalizability: there is a lack of standardization for reporting ES and this creates difficulties for stakeholders seeking to understand the information and to ensure transparency

Study: Merrilees and Marles (2011)

Topic: environmental practices

Theoretical Bases: sustainability theory

Constructs: green policies, environmental practices

Methods: case study

Setting: exhibition events; boat show

Rationale for Conducting Study in Sport: “Business events are rarely studied in terms of their green practices” (p. 361)

Generalizability: “As expected with most business events, green aspects are subservient to marketing and economic considerations . . . However, the event does engage in quite a number of green practices” (p. 365)

Study: Mallen, Adams, Stevens, and Thompson (2010)

Topic: environmental directions at major North American sport facilities

Theoretical Bases: sustainability theory; appreciative theory

Constructs: environmental competencies, trends, best practices, and challenges

Methods: Delphi study

Setting: senior executives or managers at major North American sport facilities

Rationale for Conducting Study in Sport: little is understood concerning sport environmental sustainability

Generalizability: “80% of the predicted trends are most likely to occur in the operational performance category” (p. 381)

Study: Mallen, Stevens, Adams, and McRoberts (2010)

Topic: sport event environmental performance

Theoretical Bases: sustainability theory

Constructs: environmental organizational system, activities, countermeasures, tracking, inputs and outputs

Methods: multi-method case study

Setting: 42nd International Children’s Games, San Francisco, United States

Rationale for Conducting Study in Sport: “Despite recent calls to reduce the environmental impact of major sporting events, comprehensive measurements, evaluations, and reports on environmental sustainability (ES) within the sport sector are rare” (p. 97)

Generalizability: “Structural, systemic and cultural organizational barriers prevented the implementation of many ES policies and programs. Sport event EP [environmental performance] success is contingent upon organizers understanding both the operational reality in which they must stage the event, and their strategic capability to fulfill this goal” (p. 97)

Study: Dingle (2009)

Topic: the motorsport industry and environmental sustainability

Theoretical Bases: sustainability theory

Constructs: the triple bottom line (environmental, social, and economic); natural capital

Methods: descriptive

Setting: the motorsport industry

Rationale for Conducting Study in Sport: “This is important because of the growing concerns around the globe of the impact of human activity on the environment” (p. 80)

Generalizability: Motorsport, “given the evidence of the global environmental problems facing humanity, there is considerable doubt as to whether it is marketed and managed in an environmentally sustainable way” (p. 93)

Study: Otto and Heath (2009)

Topic: the relationship between tourism and climate change

Theoretical Bases: sustainability theory

Constructs: transportation, accommodation, energy consumption and implementation of plans

Methods: qualitative; in-depth personal interviews

Setting: 2010 Soccer World Cup stakeholders in Tshwane Metropole, South Africa

Rationale for Conducting Study in Sport: “With increasing concern regarding global climate change, there is a growing need to ensure responsible management practices for mega-events that take cognizance of the realities and challenges regarding this phenomenon” (p. 169)

Generalizability: “A key finding of the study was that the various stakeholders are not aware of the contributions their operations make to climate change” (p. 169)

Subtheme 3: Environmental Operational Countermeasures; *factors:* countermeasures against global warming (including renewable energy, incinerating waste, saving electricity, energy-saving equipment, shifting transport from truck to train or ship and environmentally friendly automobiles); countermeasures against environmental issues in sport event production (including reducing, reusing, and recycling; reducing use of packaged material; implementing green purchase and procure; lifecycle assessment; environmental marks or labels; environmental marketing; and the checking of suppliers for environmental products) and countermeasures against environmental risk (including a risk management system, reduction of chemical use, measuring discharge of toxic chemicals, reducing the use of chlorofluorocarbons, training for environmental emergencies, delegating environmental emergency responsibilities, and sorting out related environmental laws and regulations)

Subtheme 4: Environmental tracking; *factors:* tracking energy use, financial resource use, general wastes, water drainage, air and water pollution, greenhouse gases, and compliance

Study: Dolf and Teehan (2015)

Topic: carbon footprint of varsity athletes

Theoretical Bases: life cycle theory and sustainability theory

Constructs: carbon impact of varsity travel for teams and spectators

Methods: life cycle assessment

Setting: variety sport at the University of British Columbia, Canada

Rationale for Conducting Study in Sport: “Carbon footprinting is promising as a method to quantify environmental impacts and using this information to inform planning decisions” (p. 254)

Generalizability: Study: “We find the biggest opportunities for footprint reductions by spectators and teams alike are strategies that (a) reduce long-distance air travel, (b) increase vehicle occupancy rates, and (c) encourage low-emission travel mode choices” (p. 244)

Study: Chard and Mallen (2012)

Topic: sport automobile travel required for community hockey games

Theoretical Bases: sustainability theory

Constructs: carbon impact of automobile travel

Methods: carbon footprint calculation and analysis

Setting: automobile travel to get boys 9 to 10 years old playing A to AAA level to their hockey games in Ontario, Canada

Rationale for Conducting Study in Sport: “to generate understandings concerning the environmental impacts of hockey at the community level” (p. 493)

Generalizability: “community level sport parents and managers must take responsibility for their carbon impact and reconsider the value of safeguarding the natural environment” (p. 483). Manuscript encouraged a redesign of league games and divisional alignment to reduce the carbon impact from automobile travel

Theme 2: Environmental operational management

Subtheme 5: Environmental Inputs; *factors:* measurement of the use of oil, gas, electricity, water, raw materials, paper, packaged materials, and chemicals

Subtheme 6: Environmental Outputs; *factors:* measurement of the actual waste disposed, carbon dioxide emissions, sulfur oxide emissions, nitrogen oxide emissions, biochemical oxygen demand, water drainage, laws concerning pollutants released or transferred, and actual pollutants released or transferred

The robustness of the literature

The Mallen et al. (2011) content analysis that examined key sport journals found 17 manuscripts on sport and environmental sustainability published between 1987 and 2008. This chapter followed the same methodological framework and systematically examined over 3,700 manuscripts within 21 sport management journals and found an additional 53 manuscripts on the topic published from 2009 to 2015. This represents a 311 percent increase in publications on the topic within this sport journal sampling. These manuscripts indicate that the sport research on this topic has moved from the embryonic to the primary stage of research on the topic.

The *Sport Management Review* outpaced all of the other journals under study with 15 manuscripts (28.3 percent), followed by *Event Management: An International Journal* and *European Sport Management Quarterly* with 7 manuscripts (13.2 percent) each on the topic. This means that 54.7 percent of the research on the topic from 2009–2015 in the sport-related journal sampling was published within three journals.

The foci within the 53 manuscripts varied and included areas such as *awareness* (Mair, 2014; Mansfield, 2009); *baseball and environmentalism* (Nguyen et al., 2014); *carrying capacity* (Ponting & O'Brien, 2015); *case study* (Agha, Fairley, & Gibson, 2012; Fairley, Typer, Kellett, & D'Elia, 2011; Kellett & Turner, 2010; Merrilees & Marles, 2011; Phillips & Turner, 2014); *carbon footprint* (Chard & Mallen, 2012; Dolf & Teehan, 2015); *climate change* (Fairley et al., 2015); *communication* (MacIntosh et al., 2013; Spector et al., 2012; Trendafilova et al., 2013); *connection to nature* (Brymer et al., 2009); *content analysis* (Dickson et al., 2011; Mallen et al., 2011); *debate or ideas on a potential future* (Mallen & Chard, 2012, 2011); *education* (Harris, 2014); *event legacies* (Agha et al., 2012; Shalini & Stubbs, 2013); *environmental impacts* (Cheng & Jarvis, 2010); *environmental intentions* (McCullough & Cunningham, 2011; Jin et al., 2011a) and *initiatives* (Walker & Parent, 2010); *fulfilling bid promises* (Paquette et al., 2011); *history* (Schaffner, 2009); *interpretations of sustainability* (Hall, 2012); *perceived influencers* (Inoue & Kent, 2012b; Kellison & Mondello, 2012); *perceptions/perspectives* (Konstantaki & Wickens, 2010) by students (Casper & Pfahl, 2012; Inoue & Kent, 2012a), by city officials (Djaballah et al., 2015), by residents (Jin et al., 2011b; Karadakis & Kaplanidou, 2012; Liu et al., 2014), and by facility managers (Mallen et al., 2012); *politics* (Mincyte et al., 2009); *performance* (Mallen et al., 2010); *relationships* (Ponsford & Williams, 2010; Trendafilova & Babiak, 2013); *strategies and practices* (Casper et al., 2012; Otto & Heath, 2009); *triple bottom line* (Dingle, 2009; Kellison & Kim, 2014; Tyler et al., 2011); and the *willingness to pay* (Limehouse et al., 2010).

In the Mallen et al. (2011) study, all of the manuscripts involved a qualitative method. In this chapter, 16.9 percent of the manuscripts utilized the quantitative method and represented a movement towards utilizing both methods. The studies including quantitative methods were Casper and Pfahl (2012), Casper et al. (2012), Chen and Jarvis (2010), Inoue and Kent (2012a), Jin et al. (2011a), Jin et al. (2011b), Limehouse et al. (2010), Liu et al. (2014), and McCullough and Cunningham (2011).

As in the Mallen et al. study, the research was predominately focused on *Theme 1: Introduction to Environmental Sustainability* with 37 (69.8 percent) of the publications, and then 14 (26.4 percent) involved *Theme 2: Environmental Activities*. There were only two (3.7 percent) manuscripts on *Theme 4: Tracking* and zero (0.0 percent) manuscripts on *Theme 3: Environmental Operational Countermeasures*, *Theme 5: Inputs Measurements*, or *Theme 6: Outputs Measurements*. This reveals that understandings on sport and environmental sustainability are incomplete, as there are multiple gaps in the literature.

Where to go from here

The author of this chapter encourages graduate students and faculty members to conduct research to fill the identified gaps to ensure full understandings on the topic within the two themes and six subthemes listed earlier, particularly in the three subthemes where there were zero publications. This research is needed to advance knowledge on the environmental impact of sport, how sport is adapting, and to determine potential options for managing the environmental sustainability challenges. Research is particularly needed in the areas of focus for the 8 of the 21 journals examined that did not have a single manuscript on sport and environmental sustainability, including the *International Journal of Sport Finance*; *International Sports Law: Pandektis*; *Journal of Hospitality, Leisure, Sport and Tourism Education*; *Journal of the Philosophy of Sport*; *Journal of Sport Behavior*; *Sociology of Sport Journal*; *Sport History Review*; and *Sport Marketing Quarterly*. The lack of research examinations on the topic areas of focus within these journals means a continuation of the paucity of knowledge on sport and environmental sustainability in

these key sport management journals. Yet perhaps manuscripts on these, as well as other related topics, can be found in journals outside of the key sport management journal under review in this chapter.

A quick scan, or non-systematic process, found multiple examples of sport and environmental sustainability literature published outside the sport journal sampling examined in this chapter. For instance, Scott, Steiger, Rutty, and Johnson (2015) discussed climate change and the future of the Winter Olympic Games in *Current Issues in Tourism*. Steiger (2010) examined the impact of climate change on the length of the Austrian ski season and the impacts concerning snow-making in *Climate Research*. Han, Nelson, and Kim (2015) focused on pro-environmental sport event tourism behavior in *An International Journal of Tourism, Space and Environment*. Also, Death's (2011) publication on environmental efforts at the 2010 FIFA World Cup was published in the *Journal of Environmental Policy & Planning*.

Interestingly, manuscripts within the non-sport journals were authored by some of the same researchers publishing in the sport-related journal sampling examined. Examples include Babiak and Trendafilova's (2011) manuscript published in *Corporate Social Responsibility and Environmental Management* that examined motives and pressures to adapt practices; Salome, van Bottenburg, and van den Huvel's (2013) study in *Leisure Studies* that focused on green lifestyle and sport; Casper, Pfahl, and McCullough's (2014) manuscript in *Journal of Issues in Intercollegiate Athletics* that examined sustainability efforts by athletic departments; Trendafilova, McCullough, Pfahl, Nguyen, Casper, and Picariello's (2014) work in *Global Journal on Advances in Pure & Applied Sciences* that examined the current state and trends in sport environmental sustainability; and Brocherie, Girard, and Millet's (2015) examination on emerging environmental and weather challenges for outdoor sports in *Climate*. The examples illustrate that academics are publishing their sport and environmental sustainability research in a plethora of journals inside and outside the sport management sphere and that there is a need to expand the systematic content analysis outlined earlier to fully understand the sport literature on the topic.

If an examination of journals was expanded beyond the key sport-related journal sample, a content analysis could be conducted on journals within specific areas, such as sport geography, medicine, law, and environmentalism to yield additional sport and environmental sustainability research. Sport geography manuscripts have the potential to advance knowledge within areas such as the impact of climate change in a particular region of the world, the geographical influences, trends, areas of resilience, and sites where adaptation for environmental sustainability within sport is occurring. Research examples include Helbich, Bocker, and Dijkstra's (2014) examination of cycling and weather conditions in Rotterdam, Netherlands, in the *Journal of Transport Geography*; Hopkins and Maclean's (2014) focus on Scotland's ski industry and climate change in *Tourism Geographies*; and Dawson's (2009) dissertation on climate change and the northeast U.S. ski sector. It is proposed that there are plenty of other topics for future research studies in this area, such as the impact of heat from climate change on athletes. This issue could include future research on athletes competing at the Qatar FIFA World Cup in 2022 that has the potential to be a test case, or a precursor for understanding the impact of rising temperatures on sport participation throughout the world and the impact of event site selection on athletes. Matzarakis and Frohlich (2015) examined the Qatar event from the perspective of visitors attending and determined "that this kind of event may not be appropriate for visitors, if it is placed during months with extreme conditions" (p. 481). So what will the research determinations be concerning the impacts on athletes competing under the Qatar event's environmental conditions? Additionally, sport geography research that currently has not been applied to sport can be extended to further our understandings concerning sport and environmental sustainability. For instance, it could be interesting to apply Kokolakis, Lera-Lopez, and Castellanos' (2014) study on the impact of

socio-demographic variables such as educational levels, ethnicity, and income on sports participation to determine the variable of climate change and its impact on sports participation across geographical regions worldwide.

Medical journals also have the potential to reveal the environmental impacts on sport and the relationship to medical conditions and health. One example includes Cheuvront and Haymes' (2001) study in *Sports Medicine* that focused on marathon runners and thermoregulation, including the impacts from environmental influences. Second, Roshan, Mirkatouli, Shakoov, and Mohammad-Nejad (2010) examined the impact of wind chill on the health of athletes in winter sports in the *Asian Journal of Sports Medicine*. Third, Bahr and Reeser's (2012) publication in the *British Journal of Sports Medicine* examined heat stress and its impact on elite volleyball players.

It is further proposed in this chapter that related medical research that is not focused specifically on sport still could have the potential to be applied to sport and environmental sustainability scenarios. For instance, athletes may have to train and compete in changing environmental conditions and need to know how to manage the associated impacts of climate change. Applicable work in this topic area can be found in the *International Journal of Hyperthermia*, whereby Brocherie, Girard, Pezzoli, and Millet (2014) focused on overcoming challenging factors from exercising outdoors in ambient heat; this work can be applied to competing in heat conditions. Atha's (2013) study in *Emergency Medicine Clinics of North America* was on heat-related illness, and Bates and Miller's (2008) study in the *Journal of Occupational Medicine and Toxicology* was on sweat rates and sodium loss when exposed to heat conditions. The application of the results from a variety of studies, although they are not specifically focused on sport, may aid in understandings and can underscore additional research on the topics as they relate to sport.

Legal journals should also be explored for applicable sport and environmental sustainability research. An example includes Baldwin's (2010) research on football and climate change in the *Local Environment: The International Journal of Justice and Sustainability*. A further example is Bodie's (2011) work on NASCAR and environmental sustainability in the *Wake Forest Law Review*. The examination of sport law manuscripts can branch out to areas such as international agreements and criminality; for instance, could there be future legal ramifications if a sport event does not fulfill the environmental promises outlined within their bid? If so, what could they entail?

Journals in the area of environmentalism are also available to be reviewed for the applicability of the manuscripts to sport. Examples of journals include *Biotechnology for Biofuels*, *Climate Law*, *Energy Conversion and Management*, *Energy and Environmental Science*, *Energy for Sustainable Development*, *International Journal of Energy Research*, *International Journal of Green Energy*, *Environmental Innovations and Societal Transitions*, *International Journal of Sustainable Transportation*, *Journal of Cleaner Production*, *Journal of Power Sources*, *Renewable Energy*, *Renewable and Sustainable Energy Reviews*, *Sustainable Development*, *Sustainable Environment Research*, and *Sustainability*. Each journal and their areas of focus can shed light on the potential opportunities and constraints as sport works towards understandings for the issue of environmental sustainability.

Conclusion

The combination of this chapter along with the Mallen et al. (2011) work represents the most comprehensive content analysis of environmental sustainability research in a sport-related journal sample. The Mallen et al. manuscript found 17 manuscripts published between 1987 and 2008. This chapter outlined an additional 53 manuscripts that were published within the 21 key sport journal sampling from 2009–2015. This represented a 311 percent increase in manuscripts on the topic within a seven-year time period. The research manuscripts, however, did not provide full understandings based on the two themes and six subthemes, including an introduction

to environmental sustainability, environmental activities, environmental countermeasures, tracking, inputs measurements, and outputs measurements. Additional research is needed to fill the gaps, particularly in measuring the impact of sport on the environment (inputs and outputs) and countermeasures used to offset the impacts. This chapter illustrates that additional journals, within and outside of sport, need to be examined for related sport and environmental sustainability research, such as sport medicine, geography, law, and environmentalism. An additional 20 manuscripts, published in a variety of journals found outside of the sport journal sampling, along with 15 journal titles that focus on environmentalism, were offered to aid in advancing further research. Overall, this chapter encourages faculty and graduate students to select from the variety of available topic areas and to conduct research to fill in the knowledge gaps on sport and environmental sustainability. Each study completed can aid to advance our knowledge of what is happening, along with providing understandings concerning options for managing the critical issue of sport and environmental sustainability.

References

- Agha, N., Fairley, S., & Gibson, H. (2012). Considering legacy as a multi-dimensional construct: The legacy of the Olympic Games. *Sport Management Review, 15*, 125–139.
- Atha, W. (2013). Heat-related illness. *Emergency Medicine Clinics of North America, 31*, 1097–1108.
- Babiak, K., & Trendafilova, S. (2011). CSR and environmental responsibility: Motives and pressures to adopt sustainable management practices. *Corporate Social Responsibility and Environmental Management, 18*, 11–24.
- Bahr, R., & Reeser, J. (2012). New guidelines are needed to manage heat stress in elite sports – the Federation Internationale de Volleyball (FIVB) heat stress monitoring program. *British Journal of Sports Medicine, 46*, 805–809.
- Baldwin, R. (2010). Football and climate change: Strange bedfellows or a means of going beyond the usual suspects in encouraging pro-environmental behavioral change. *Local Environment: The International Journal of Justice and Sustainability, 15*, 9–10.
- Bates, G., & Miller, V. (2008). Sweat rate and sodium loss during work in the heat. *Journal of Occupational Medicine and Toxicology, 3*, 1–6.
- Bodie, M. (2011). NASCAR green: The problem of sustainability in corporations and corporate. *Wake Forest Law Review, 46*, 491–522.
- Brocherie, F., Girard, O., & Millet, G. (2015). Emerging environmental and weather challenges in outdoor sports. *Climate, 3*, 492–521.
- Brocherie, F., Girard, O., Pezzoli, A., & Millet, G. (2014). Outdoor exercise performance in ambient heat: Time to overcome challenging factors? *International Journal of Hyperthermia, 30*, 547–549.
- Brymer, E., Downey, G., & Gray, T. (2009). Extreme sports as a precursor to environmental sustainability. *Journal of Sport and Tourism, 14*, 193–204.
- Casper, J., & Pfahl, M. (2012). Environmental behaviour frameworks of sport and recreation undergraduate students. *Sport Management Education Journal, 6*, 8–20.
- Casper, J., Pfahl, M., & McCullough, B. (2014). Intercollegiate sport and the environment: Examining fan engagement based on athletics department sustainability efforts. *Journal of Issues in Intercollegiate Athletics, 7*, 65–91.
- Casper, J., Pfahl, M., & McSherry, M. (2012). Athletics department awareness and action regarding the environment: A study of NCAA Athletic Departments sustainability practices. *Journal of Sport Management, 26*, 11–29.
- Chard, C., & Mallen, C. (2012). Examining the linkages between automobile use and carbon impacts of community-based ice hockey. *Sport Management Review, 15*, 476–484.
- Cheng, E., & Jarvis, N. (2010). Residents' perceptions of the social-cultural impacts of the 2008 Formula 1 Singtel Singapore Grand Prix. *Event Management, 14*, 91–106.

- Cheuvront, S., & Haymes, M. (2001). Thermoregulation and marathon running: Biological and environmental influences. *Sports Medicine*, 31, 743–762.
- Dawson, J. (2009). *Climate change vulnerability of the US northeast ski sector: A multi-methods systems-based approach* (Unpublished doctoral dissertation). University of Waterloo, Canada.
- Death, C. (2011). Greening the 2010 FIFA World Cup: Environmental sustainability and the mega-event in South Africa. *Journal of Environmental Policy & Planning*, 13, 99–117.
- Dickson, T., Benson, A., & Blackman, D. (2011). Developing a framework for evaluating Olympic and Paralympic Legacies. *Journal of Sport and Tourism*, 16, 285–302.
- Dingle, G. (2009). Sustaining the race: A review of literature pertaining to the environmental sustainability of motorsport. *International Journal of Sports Marketing and Sponsorship*, 11, 80–96.
- Djaballah, M., Hautbois, C., & Desbordes, M. (2015). Non-mega sporting events' social impacts: A sense-making approach of local governments' perceptions and strategies. *European Sport Management Quarterly*, 15, 48–76.
- Dolf, M., & Teehan, P. (2015). Reducing the carbon footprint of spectator and team travel at the University of British Columbia's varsity sports events. *Sport Management Review*, 18, 244–255.
- Fairley, S., Ruhanen, L., & Lovegrove, H. (2015). On frozen ponds: The impact of climate change on hosting pond hockey tournaments. *Sport Management Review*, 18, 618–626.
- Fairley, S., Tyler, D., Kellett, P., & D'Elia, K. (2011). The Formula One Australian Grand Prix: Exploring the triple bottom line. *Sport Management Review*, 14, 141–152.
- Gibson, H. J., Kaplanidou, K., & Kang, S. J. (2012). Small-scale event sport tourism. *Sport Management Review*, 15, 160–170.
- Hall, M. (2012). Sustainable mega-events: Beyond the myth of balanced approaches to mega-event sustainability. *Event Management*, 16, 119–131.
- Han, J., Nelson, C., & Kim, C. (2015). Pro-environmental behavior in sport event tourism: Roles of event attendees and destinations. *An International Journal of Tourism, Space and Environment*, 17, 719–737.
- Harris, R. (2014). The role of large-scale sporting events in host community education for sustainable development: An exploratory case study of the Sydney 2000 Olympic Games. *Event Management*, 18, 207–230.
- Helbich, M., Bocker, L., & Dijst, M. (2014). Geographic heterogeneity in cycling under various weather conditions: Evidence from Greater Rotterdam. *Journal of Transport Geography*, 38, 38–47.
- Hopkins, D., & Maclean, K. (2014). Climate change perceptions and responses in Scotland's ski industry. *Tourism Geographies*, 16, 400–414.
- Hvenegaard, G. (2011). Potential conservation benefits of wildlife festivals. *Event Management*, 15, 373–386.
- Inoue, Y., & Kent, A. (2012a). Sports teams as promoters of pro-environmental behavior: An empirical study. *Journal of Sport Management*, 26, 417–432.
- Inoue, Y., & Kent, A. (2012b). Investigating the role of corporate credibility in corporate social marketing: A case study of environmental initiatives of professional sport organizations. *Sport Management Review*, 15, 330–344.
- Jin, L., Mao, L., Zhang, J., & Walker, M. (2011a). Impact of green stadium initiatives on donor intentions toward an intercollegiate athletic programme. *International Journal of Sport Management and Marketing*, 10, 121–141.
- Jin, L., Zhang, J., Ma, X., & Connaughton, D. (2011b). Residents' perceptions of environmental impacts of the 2008 Beijing Green Olympic Games. *European Sport Management Quarterly*, 11, 275–300.
- Karadakis, K., & Kaplanidou, K. (2012). Legacy perceptions among host and non-host Olympic Games residents: A longitudinal study of the 2010 Vancouver Olympic Games. *European Sport Management Quarterly*, 12, 243–264.
- Kellett, P., & Turner, P. (2010). CSR and water management in the sport sector: A research agenda. *International Journal of Sport Management and Marketing*, 10, 142–160.
- Kellison, T., & Hong, S. (2015). The adoption and diffusion of pro-environmental stadium design. *European Sport Management Quarterly*, 15, 249–269.
- Kellison, T., & Kim, Y. (2014). Marketing pro-environmental venues in professional sport: Planting seeds of change among existing and prospective consumers. *Journal of Sport Management*, 28, 34–48.

- Kellison, T., & Mondello, M. (2012). Organisational perception management in sport: The use of corporate pro-environmental behaviour for desired faculty referenda outcomes. *Sport Management Review*, 15, 500–512.
- Kokolakakis, T., Lera-Lopez, L., & Castellanos, P. (2014). Regional differences in sports participation: The case of local authorities in England. *International Journal of Sport Finance*, 9, 149–171.
- Konstantaki, M., & Wickens, E. (2010). Residents' perceptions of environmental and security issues at the 2012 London Olympic Games. *Journal of Sport and Tourism*, 15, 337–357.
- Limehouse, F., Melvin, P., & McCormick, R. (2010). The demand for environmental quality: An application of hedonic pricing in golf. *Journal of Sports Economics*, 11, 261–286.
- Liu, D., Broom, D., & Wilson, R. (2014). Legacy of the Beijing Olympic Games: A non-host city perspective. *European Sport Management Quarterly*, 14, 485–502.
- MacIntosh, E., Apostolis, N., & Walker, M. (2013). Environmental responsibility: Internal motives and customer expectations of a winter sport provider. *Journal of Sport and Tourism*, 18, 99–116.
- Mair, J. (2014). Events as pro environmental learning spaces. *Event Management*, 18, 421–429.
- Mallen, C., Adams, L., Stevens, J., & Thompson, L. (2010). Environmental sustainability in sport facility management: A Delphi study. *European Sport Management Quarterly*, 10, 367–389.
- Mallen, C., & Chard, C. (2011). A framework for debating the future of environmental sustainability in the sport academy. *Sport Management Review*, 14, 424–433.
- Mallen, C., & Chard, C. (2012). "What could be" in Canadian sport facility environmental sustainability. *Sport Management Review*, 15, 230–243.
- Mallen, C., Stevens, J., & Adams, L. (2011). A content analysis of environmental sustainability research in a sport-related sample. *Journal of Sport Management*, 25, 240–256.
- Mallen, C., Stevens, J., Adams, L., & McRoberts, S. (2010). The assessment of the environmental performance of an international multi-sport event. *European Sport Management Quarterly*, 10, 97–122.
- Mansfield, L. (2009). Fitness cultures and environmental (in)justice? *International Review for the Sociology of Sport*, 44, 345–362.
- Matzarakis, A., & Frohlich, D. (2015). Sport events and climate for visitors – the case of FIFA World Cup in Qatar 2022. *International Journal of Biometeorology*, 59, 481–486.
- McCullough, B., & Cunningham, G. (2011). Recycling intentions among youth baseball spectators. *International Journal of Sport Management and Marketing*, 10, 104–120.
- McCullough, B., Pfahl, M., & Nguyen, S. (2016). The green waves of environmental sustainability in sport. *Sport in Society*, 19, 1040–1065.
- Merrilees, B., & Marles, K. (2011). Green business events: Profiling through a case study. *Event Management*, 15, 361–372.
- Mincyte, D., Casper, M., & Cole, C. (2009). Sports, environmentalism, land use, and urban development. *Journal of Sport and Social Issues*, 33, 103–110.
- Nguyen, S., Trendafilova, S., & Pfahl, M. (2014). The natural resource-based view of the firm (NRSBV): Constraints and opportunities for a green team in professional sport. *International Journal of Sport Management*, 15, 485–517.
- Otto, I., & Heath, E. (2009). The potential contribution of the 2010 Soccer World Cup to climate change: An exploratory study among tourism industry stakeholders in the Tshwane Metropole of South Africa. *Journal of Sport and Tourism*, 14, 169–191.
- Paquette, J., Stevens, J., & Mallen, C. (2011). The interpretation of environmental sustainability by the International Olympic Committee and Organizing Committees of the Olympic Games from 1994 to 2008. *Sport in Society*, 14, 355–369.
- Phillips, P., & Turner, P. (2014). Water management in sport. *Sport Management Review*, 17, 376–389.
- Ponsford, I., & Williams, P. (2010). Crafting a social license to operate: A case study of Vancouver 2010's Cypress Olympic Venue. *Event Management*, 14, 17–36.
- Ponting, J., & O'Brien, D. (2015). Regulating "Nirvana": Sustainable surf tourism in a climate of increasing regulation. *Sport Management Review*, 18, 99–110.
- Roshan, G., Mirkatouli, G., Shakoov, A., & Mohammad-Nejad, V. (2010). Studying wind chill as a climatic index effective on the health of athletes and tourists interested in winter sports. *Asian Journal of Sports Medicine*, 1, 108.

- Salome, L. R., van Bottenburg, M., & van den Huvel, M. (2013). 'We are as green as possible': Environmental responsibility in commercial artificial settings for lifestyle sports. *Leisure Studies*, 32, 173–190.
- Schaffner, S. (2009). Environmental sporting: Birding at superfund sites, landfills, and sewage ponds. *Journal of Sport and Social Issues*, 33, 206–229.
- Scott, D., Steiger, R., Ruddy, M., & Johnson, P. (2015). The future of the Olympic Winter Games in an era of climate change. *Current Issues in Tourism*, 18, 913–930.
- Shalini, S., & Stubbs, W. (2013). Green Olympics, green legacies? An exploration of the environmental legacies of the Olympic Games. *International Review for the Sociology of Sport*, 48, 485–504.
- Spector, S., Chard, C., Mallen, C., & Hyatt, C. (2012). Socially constructed environmental issues and sport: A content analysis of ski resort environmental communications. *Sport Management Review*, 15, 416–433.
- Steiger, R. (2010). The impact of climate change on ski season length and snowmaking requirements in Tyrol, Austria. *Climate Research*, 43, 251–262.
- Tranter, P., & Lowes, M. (2009). Life in the fast land: Environmental, economic, and public health outcomes of motorsport spectacles in Australia. *Journal of Sport and Social Issues*, 33, 150–168.
- Trendafilova, S., & Babiak, K. (2013). Understanding strategic corporate environmental responsibility in professional sport. *International Journal of Sport Management and Marketing*, 13, 1–26.
- Trendafilova, S., Babiak, K., & Heinze, K. (2013). Corporate social responsibility and environmental sustainability: Why professional sport is greening the playing field. *Sport Management Review*, 16, 298–313.
- Trendafilova, S., McCullough, B., Pfahl, M., Nguyen, S., Casper, J., & Picariello, M. (2014). Environmental sustainability in sport: Current state and future trends. *Global Journal on Advances in Pure & Applied Sciences*, 3, 9–14.
- United Nations (UN) Brundtland Report. (1987). *96th Plenary meeting, United Nations General Assembly report to the World Commission on the environment and development*. Retrieved from <http://www.un.org/documents/ga/res/42/ares/42-187.htm>
- United Nations Environmental Programme (UNEP). (2007). *United Nations environmental programme: Sport and the environment*. Retrieved from www.unep.org/sport_env/
- Walker, M., & Parent, M. (2010). Toward an integrated framework of corporate social responsibility, responsiveness, and citizenship in sport. *Sport Management Review*, 13, 198–213.

3

ECONOMICS, SPORTS, AND THE ENVIRONMENT

Incentives and intersections

Allen R. Sanderson and Sabina L. Shaikh¹

The systematic study of the economics of sport began 60 years ago, with Simon Rottenberg's seminal 1956 *Journal of Political Economy* article, "The Baseball Players' Labor Market." Focusing on the labor market in baseball, Rottenberg tried to define the nature of sports leagues in general, including the competitive and cooperative elements in them, and the distribution of playing strengths across teams (that is, competitive balance). In the 15 years following Rottenberg, there was relatively little activity in this new world of sports economics. Then came the deluge – player free agency, luxurious state-of-the-art sports facilities, and the explosion of revenues in sports, due principally to television broadcasting – that turned players into millionaires and owners into billionaires. The complementary "shoe" to drop was the application of economics and statistics to the world of sports in terms of personnel decisions, on-field strategies, and sports analytics in general (a field created first by the baseball historian and statistician Bill James and then made popular by Michael Lewis's 2003 book *Moneyball*).

The birth of the modern environmental movement occurred independently of these important factors in the sports world, but it happened concomitantly, starting in the 1960s, with widespread recognition in 1970 – the year of the first "Earth Day" celebration and the formation of the U.S. Environmental Protection Agency (EPA). Although the focus of those involved in environmental matters has evolved over time from natural resource scarcity to environmental quality, global climate change, and sustainability, the underlying principles remain constant, and environmental concerns, along with economic considerations, now permeate virtually all aspects of human activity, including sports.

In this chapter we hope to bring together sports and environment – two important pillars of society – through the study of economics. We first summarize fundamental economic principles, followed by a primer on the economics of sports. Next, we highlight the basic tenets of environmental economics. Then, we consider the theoretical underpinnings and applications of these principles and extensions into the sporting world. Finally, we offer a summary and suggest an agenda for further research and analyses.

Principles of economics

Basic tenets of neoclassical economics begin with the premise that scarcity forces individuals, businesses, and governments to make choices and that those choices involve costs – opportunity

costs, or alternatives not chosen, in economic jargon; that there are usually tradeoffs as well as risks involved when choosing one course of action over another.² A complementary assumption is that people “think at the margin,” that is, a little bit more versus a little bit less, rather than all-or-nothing decisions, weighing costs and benefits, responding predictably and purposefully to incentives in their decision-making. These collective decisions form a competitive market, the premise generally favored by economists in order to make the most of society’s scarce resources. When an outcome of this market maximizes societal well-being, using the fewest scarce resources, it is considered to be economically efficient.

Disagreements occur in situations where one of the tradeoffs involves what is efficient on the one hand but not perceived as fair on the other; that markets are arguably not competitive and thus firms may have some degree of market power over their customers or their employees; that economic actors are not sufficiently well informed as they confront decisions, and because of other behavioral factors they may be inconsistent in their choices and act in less predictable ways. Possible causes of these inefficient outcomes (also known as “market failures”) include classes of goods such as “externalities” (costs or benefits that spill over onto third parties) and “public goods” (things or activities that can be enjoyed without paying), which leads to so-called free riders that may call for government intervention to influence outcomes. In addition, there are healthy debates and research involving whether people are rational (versus irrational) actors and the extent to which their values can – or should – be shaped and their preferences influenced for some “greater good.”

These latter two considerations – imperfect markets and imperfect people, coupled with policies to deal with externalities and public goods – come to the front in the intersection of sports and the environment. In these cases, there may be a legitimate role for the public sector to be involved in improving market outcomes, although reasonable people – and economists – will disagree as to where to draw that line.

In a well-functioning competitive market, firms both influence and are influenced by the preferences of their customers, and as these preferences change, so do production processes and the goods themselves. And thus if environmental considerations such as pollution control or climate change matter to customers – in this case sports fans – then organizations and teams are likely to pay attention. Because the sports complex, as with any industry, actively seeks to appeal to new customers, it would be of considerable interest for them to know if the characteristics of new potential fans assign higher priorities to the environment.

In these conversations, it is important not to confuse motives with outcomes. For example, a business firm may be motivated by profit and self-interest, arguably not particularly ennobling traits. But a market system based in part on self-interest does not automatically translate into it being bad for consumers, workers, the poor, or the environment. Or, conversely, because non-profit organizations are not ostensibly motivated by profit, that does not necessarily imply that their activities are good for everyone – and the Earth. For example, big-time college athletics in the United States is largely a non-profit enterprise, yet for all intents and purposes, its strategic decisions and actions mirror quite closely those of its professional counterparts.

Finally, the term “sustainability” is identifiable and largely understood as a concern for the planet, current resource utilization versus extant supplies, or a nation in terms of its activities. On a smaller level, one could argue that a severe drug or alcohol addiction is not sustainable in terms of one’s continued employment or health, or that a city’s current balance sheet of expenditures and revenues is not sustainable. But when it comes to a firm, it is less obvious what that term actually means. For example, for a university to be sustainable that largely means solvency – does it have enough revenues from tuition-paying students, sponsored research, and alumni contributions to maintain its activities and academic programs? And the same is largely true when

applied to sports franchises: Are their current revenues from ticket-buying fans, television broadcasts, sponsorships, and public subventions sufficient to meet their payroll and other financial commitments? One might argue – and test empirically – that scale may matter: sustainability or environmental sustainability may be conceptually more appropriate on a larger, global stage, and thus one manifestation of that has been the Olympic Movement, more than other less global sports activities, incorporating that desideratum into its mission.

The economics of sports

When it comes to the business of sports, there are several deviations from competitive market ideals when it comes to the basic institutional framework and outcomes. For example, the assumptions that on the output side, the prices consumers pay are approximately equal to firms' production costs, and on the input side, the wages paid to workers approximate their economic worth to their employers, are violated in most sports economics contexts because these markets are not competitive. That is, in sports the prices paid for the various products and activities are likely to be in excess of the costs of production, and wages paid are likely to be less than the economic value of the employees' contributions precisely because the producers – leagues and owners – possess some degree of market power and can exercise it by jointly restricting output, charging higher prices; and because in most cases they represent the only reasonable employment opportunity, they can pay the players lower-than-competitive wages. In addition, today, as opposed to 100 years ago, there is considerable power on the other side of the labor market because players' associations (i.e., unions) bargain collectively with management over the potential spoils or, in economic jargon, "rents."³ This power in labor markets could distort efficient allocations of resources as well.

The larger economic picture in sports markets is that on both sides of the table the participants are not subject to the same market factors as in more conventional situations because new firms cannot freely enter and the employees possess specialized skills or attributes that are not easily substitutable, as would be the case in many other activities. So although the sports industry has some incentive to respond to customer tastes or societal preferences, it may be under less market-based pressure to do so. And thus these non-competitive aspects in sports markets may behave differently when it comes to some considerations, such as discrimination and the environment. Furthermore, public policies – regulation, antitrust legislation – are likely to be more accepting of joint decision-making within and across units in the sports world (including college athletics in the United States), and this further reduces the pressure to change and conform.

Of course, the personal values of employers and employees, as well as the court of public opinion and thus public-relations reactions and stances, may generate conformity to society's preferences, although it is less likely to be the norm. Therefore, one witnesses at least modest recycling programs and "green" initiatives by virtually every league, franchise, and international sports organization. However, North American sports leagues are heavily dependent upon the public trough when it comes to financing for their facilities – most of which in this country have been built in large part with public monies directly or indirectly through tax concessions and other subventions – and thus one might expect this industry to be more likely to respond to civic pressure.⁴

In terms of both positive and negative non-environmental externalities and public goods, all municipalities encounter them on a day-to-day basis as well as in both non-sports-related and sports-related "festival" contexts, many of which are nominally free and open to the public.⁵ Local large-scale sports activities may include regularly scheduled home games for a city's collegiate or professional league franchises, marathons and shorter running, biking, and triathlon

events, some of which have charity themes. In theory, each of these local activities contains public-goods aspects and public benefits, such as community spirit, and represents good public relations for the city and its citizens. But they are also likely to entail some negative externalities in the way of noise, street closures, and congestion. In addition to those latter factors, plus equity considerations – who benefits or who pays, including the political and social ramifications of gentrification in some instances – many of these events or programs will have other implicit or explicit environmental aspects, including larger-than-normal energy draws, waste management concerns, and, in terms of capital expenditures and commitments, what may fall under the generic heading of “infrastructure.” That could include building a facility for a franchise, ancillary construction (e.g., an athletes’ village, a media center) for the activities, and building or reconfiguring local transportation networks, many of which are contentious from the outset.

In addition, two other factors in the sporting world are conceptually different from other commercial endeavors, or at least more pronounced. First, the world of television and the expansion of broadcasting make this industry dramatically different now than just 50 years ago, and among other things expand the “superstar” effect and the creation and distribution of economic rents. Second, on the one hand sports leagues (and college athletics in the United States) tend to be exempt in part from antitrust legislation or regulation that affords them some protections and allows them to make joint price and output decisions that would not be condoned in more normal commercial environments. We discuss two complementary considerations in the subsections that follow.

Marketing considerations

Do players, franchises, and leagues espouse strong support for environmental causes more than they do for other contemporary social or political issues such as various antisocial behaviors, or through food or clothing drives, or programs to battle breast cancer? And how would one know or measure the relative extent of their commitment? What factors do they take into consideration when backing environmental programs or policies?

In other high-profile industries, firms and figures must weigh the costs and benefits of their convictions. Support for social justice movements – “Black Lives Matter,” for example – or campaigns on behalf of HIV-AIDS victims among Hollywood activists may actually increase their box-office appeal, but stars such as George Clooney, Sean Penn, or Angelina Jolie also run the risk of turning off a segment of the movie-going population, and thus their stances are more costly. In athletics it is a never-ending debate as to whether sports stars should be role models. But in an age of television and social media, the influence of a LeBron James or Peyton Manning can be substantial. The same holds for more polarizing figures such as Tim Tebow.

This may be less of a problem in industries where there are few perceived substitutes for the products or performers and “economic rent” is the coin of the realm. In more pedestrian situations where competitors abound, a firm or CEO has to be more careful not to antagonize a large chunk of its customer base. Thus, not surprisingly, prominent corporations often play their political cards and wallets close to their chests and are more likely to be followers rather than leaders or trendsetters.

To the extent that in the sporting world there are not as many close substitutes, then there is presumably more latitude in terms of expressing support for a social or environmental cause. For example, across many leagues and individual sports, the matter of gay, lesbian, or transgender athletes has taken center stage in recent years. Simultaneously, the National Football League (NFL) has been embarrassed by the evidence and airing of domestic violence cases. Those appear to be easy judgment calls, but even in such instances there must be some line beyond which the team or athlete will not go.

What is the environmental counterpart and line not to be crossed? That is, what programs or policies – mandatory recycling of all cups and wrappers, not selling bottled water, requiring ticket holders to buy a carbon offset – would an organization or team simply dig in its heels on? In addition, outward displays of support can be seen as emotionally positive – saluting military personnel at sports events or having a celebrity throw out the ceremonial first pitch at a baseball game – become an easier “sell” than having to couch the action in terms of a sacrifice that must be made or some modification of one’s behavior be required.

Do environmental initiatives entail sacrifices more than would a program to combat hunger or poverty? The NFL Charities programs, for example, focus on community efforts to address domestic and other forms of violence, the poor, elderly, young children, or sick, and less so efforts to clean up a lake or river, recycle, or reduce energy usage. Players and the league are more likely to associate with food and coat drives, after-school programs, and hospital visitations than valuable but also more controversial ones.

Environmental initiatives do perhaps differ if one considers the return on investment of social or charitable practices. Although there are both private and social benefits to community investment and engagement, these environmental initiatives may present additional private returns in the form of reduced energy and water costs, or reduced maintenance costs. Much of this is dependent on the current regulatory and policy climate, but it makes little economic sense for any newly constructed building or facility to adopt less than state-of-the-art technology for heating, lighting, water use, and other such features. However, to go above and beyond when it comes to the environment (i.e., solar panels, green roofs) requires additional evaluation to any private investor.

Demographic considerations

In general, whether selling a product or championing a social cause, any firm has to be careful – and lucky – when it comes to endorsements involving an athlete or other celebrity. Think Hertz and O.J. Simpson, Nike and Lance Armstrong, TAG Heuer and Maria Sharapova, or most recently, Speedo, Ralph Lauren, and others and Ryan Lochte, following ill-advised behavior at the Rio Olympic Games. In addition, due to changing tastes, income, or demographics, demand for a product or activity can come and go over time. Think Christians versus lions, or even Christians versus Christians, in ancient Rome. Or jousting in Medieval times. Or, more recently, something of a long-time national obsession in Spain – bullfighting – has waned as that public spectacle has fallen out of favor. And the use of animals – elephants in circuses, dolphins at Sea-World – is being phased out.

Boxing, once a thriving sport and television staple in the United States, a way for members of ethnic immigrant groups to rise out of their relative poverty, and creator of almost national heroes – Rocky Marciano, Muhammad Ali, or even the Hollywood twist, Rocky Balboa – now captures only a fraction of its former audiences as societal wealth increases. The NFL is battling an image and health problem with concerns over concussions. On the other hand, in terms of violence, UFC (Ultimate Fighting Championship) and MMA (Mixed Martial Arts) seem to be leaping into that void, at least among some demographic groups. Across leagues, basketball attracts younger and African American viewers; soccer draws more Hispanics; baseball followers are more male; followers of golf are more elderly.

The overriding issue here is the extent to which changing income levels, demographic shifts, or societal values affect interests and draw attention. Fans who attend major sporting events or participate in activities such as marathons have incomes two and three times that of the general population. As women enter the labor force in numbers comparable to men, and draw

commensurate incomes, that demographic shift has altered both the participation rate and interest level on the part of women, something not lost on leagues or advertisers.

Where do environmental issues enter this conversation? First, preferences change, whether it be towards recycling or global climate change. Second, the population segments most concerned about the environment and complementary social agendas have disproportionately high incomes and are better educated. In economic jargon, environmental amenities have high income elasticities.⁶ Thus sports teams and associations have a natural advantage here in that their target audiences are wealthy and are also thus likely to be sensitive to targeted “green” initiatives that they sponsor. And conversely, consumers of sporting events and products could well demand change or even punish in various ways activities of which they disapprove.

Environmental economics

Environmental economics deals primarily with issues that compromise market competitiveness and efficiency. The most likely sources of market failure are positive or negative externalities and the presence of public goods. Externalities occur when the full costs or full benefits of an activity are not borne by the decision maker. Pollution, noise, and smoking are the most commonly cited examples of negative externalities, whereas education, honeybees, research and development, and vaccinations are thought to provide positive externalities. Public goods generate positive externalities in that the benefits can be shared by all, regardless of the burden of cost, creating problems in overuse or exploitation of such resources.

Within economics, the market is by no means abandoned in such cases. In fact, sources of market failure are generally thought of as good cases for which policy intervention can restore efficient markets. Market forces are particularly powerful in dealing with environmental externalities, most commonly thought to be negative in direction, but also in facilitating the provision of positive externalities in the form of environmental or “ecosystem” services (the benefits provided to humans by nature). In either case, the assignment of property rights (i.e., giving someone the right to create the externality) is crucial in establishing the framework for market forces to internalize externalities. Once property rights have been established, dealing with environmental problems relies on direct intervention, either through incentive-based mechanisms like subsidies or rebates, or through more punitive policy measures, such as taxation, regulation, legal protections, or even outright prohibitions through some governmental action. There are many opportunities to deal with externalities privately, but to fully restore market efficiency, some type of policy oversight may be required. For public goods like parks, the government might assume ownership or provision to ensure optimal allocation, but in the interest of maintaining private investment in public resources, the usual practice is to adopt some combination of government provision and the establishment of private property rights.⁷

Global environmental problems take on a different challenge, and there are limited examples of successful cross-border environmental policies. The challenges in designing global climate accords are well demonstrated, and although sports, with its global appeal, is in a unique position to reach across borders, both private and policy-based solutions to global market failures are difficult.

An important consideration of environmental economics is the identification, measurement, and distribution of costs and benefits of problems and policies. Certain actors may be well positioned to provide environmental benefits like cleaner air, storm water management, or renewable technology research and development, but they often lack the incentive to do so, given there may be a diffuse set of beneficiaries unwilling to directly pay for the enhanced outcomes. This raises questions about how to estimate the value of those environmental benefits and

address issues about equity or fairness because costs and benefits may fall more heavily on one group (e.g., rich versus poor individuals or rich versus poor nations or current versus future generations). Furthermore, actors will generally seek to maximize private returns, which in the presence of externalities will not result in maximizing social benefits. For example, a sports team or event may choose to invest in “green” practices, which results in a cost savings to them (i.e., energy efficiency) but not those which generate additional social benefits with no private return (i.e., carbon mitigation). Clearly, there is overlap in these practices, so opportunities exist to encourage further environmental action either through direct policy intervention or the creation of market structures that promote payment for environmental services.

At first blush one might posit a one-size-fits-all theoretical framework and illustrations that would capture the intersection of economics and the environment when it comes to the sporting world, and thus type of activity or location would be invariant. However, this landscape is so multi-dimensionally heterogeneous that an argument could be made that the scale, type, and setting matter, and as a result, warrant separate considerations. Furthermore, the motivations for investment in environmental practices may differ, which can affect outcomes and the need for incentives. As noted earlier, private returns on investment certainly exist for practices such as energy efficiency, water conservation, reduction of compliance costs or regulatory fees, or in the form of public relations and being good stewards of the community. Whether or not these private returns on investment are sufficient to generate society’s preferred level of environmental protection depends on the presence and size of the externalities.

There is always the possibility that someone within a sports organization or team genuinely and passionately cares about the environment, and as a result receives utility or a warm glow from investing in such practices. There is also the possibility of appealing to new demographics of fans, those who care most about the environment. Whether or not environmental improvements will lead those who are not sports fans to engage in the sports world is a question yet unanswered.

Worldwide events and their sponsoring organizations are arguably different from a country-specific sports league or one team operating in a single city. Appealing to the planet is certainly more likely for global events, whereas managing storm water can be localized to a few square blocks of a city. Current events can also influence behavior in different levels of sports. Water conservation may be most appealing in the Western United States, whereas adoption of biofuels could attract those in the Corn Belt.

Finally, social movements can affect firms and industries. In sports, two come immediately to mind: (1) racial integration, or civil rights, in the United States, which changed the literal complexion of players on the fields and courts; and (2) the inclusion and increased participation of women, especially after Title IX of the 1972 Education Amendments, which prohibits discrimination on the basis of sex in any federally funded education program or activity. A recent White House initiative targets sports to address climate change, creating awareness through federal actions and examples from the sports industry (White House, 2016).

Bringing together these three worlds – sports, economics, and the environment – under one roof, we now turn to how motivations and incentives, private returns and social benefits, and public policies have intersected and are likely to intersect as the 21st century continues to unfold.

Sports, economics, and the environment

As outlined earlier, interactions within sports markets are varied. Consumers (e.g., fans) can engage in many different ways, including in-person attendance at sporting events, media

broadcasts, live Internet feeds, and by purchasing the myriad of memorabilia, clothing, and other products related to their favorite player or team. Producers in these industries also vary, starting with the athletes themselves, teams, facility owners, cities, leagues representing many teams and a culminating championship event or events, and large-scale global entities representing athletes and nations. As a result of this diverse mix of consumption and production activities, the types of environmental investments may vary widely as well, from athletes as spokespeople for green behavior, to facility owners' adoption of green building practices, to league-wide campaigns to promote environmental friendliness of sports teams and their fans.

The reasons for connecting sports and sustainability also vary. In some cases, as in any industry, a passionate individual may feel it is the duty of the organization to be a good steward of the environment. There may be positive returns on environmental investments by organizations and motivations related to public relations, community engagement, reputation, and corporate social responsibility. Policy, regulatory or local zoning, and land use laws can also drive environmental behavior either as compliance or through rent-seeking activities. Aside from the altruistic view that someone may possess toward the environment, the other motivations discussed earlier can be summarized in five distinct but not mutually exclusive categories:

- 1 Direct private return.** This exists when an investment provides protection and profits for the investor. This return is determined by a payback over time, usually a relatively short time, because returns in the future are discounted. Energy efficiency upgrades, for example, may cost a premium upfront but subsequently lower energy use and associated costs, eventually paying off the investment and turning into profit. The payback period necessarily depends on the price of energy.
- 2 Indirect private return.** Returns on an investment can also come in a form that doesn't directly or immediately affect a bottom line, but could in the future. These include public relations, employee satisfaction, attraction of new customers, lucrative sponsorships, and overall reputation. For public entities such as cities or colleges, indirect benefits from investments could come in the form of community engagement and recognition, increased donations, and attraction and retention of employees or students. Investments with these types of returns include water conservation, where water is priced too low in most parts of the United States to result in a significant cost saving, but promote the investor as a good steward of a scarce resource. There are also limited examples for cities as investors in Olympic Games or sports stadiums, if they can negotiate deals to receive private investments in new park space or mass transit for the community.
- 3 Social benefit.** Social benefits, which result from the presence of positive externalities, are benefits that extend to those who do not bear the cost of the investment. These types of investments, like the mitigation of greenhouse gases, which in the United States are not yet regulated in any meaningful way and consequently low valued, have clear societal benefits. It is important to note that although most environmental investments will generate both private (direct and indirect) and social returns, individual actors may only consider the private return when making the decision to invest. As a result, one could argue that private actors on their own won't generally make enough environmental investments for society's well-being. This leads directly to the next category.
- 4 Policy and regulatory.** Policy and regulatory action can motivate environmental investment to reach the level desired by society. These mechanisms range from command-and-control approaches that mandate certain types of direct or indirect environmental protection through fines and legal action, such as removal of lead in paint or installation of catalytic converters in cars, to more flexible and sometimes voluntary instruments, like taxes (e.g., gas

taxes), subsidies, and grants for cleaner sources of energy, that create incentives for private actors to invest in higher levels of environmental protection than they would otherwise.

- 5 Rent seeking.** Related to policy measures, rent seeking exists when powerful private actors use their influence to promote government support of their industry at the taxpayers' expense. Publicly funded stadiums are the most commonly cited example, although the agreement could come with strings attached to environmental outcomes such as the provision of park space.⁸

We now illustrate environmental investments by diverse sets of sports agents. The examples chosen – Olympics, National Football League, NASCAR, golf and tennis, and college athletics – are not fully inclusive of all types of sports and leagues, but rather represent different types of actors, practices, scale, settings, and global context. The motivations and incentives for investing in environmental practices differ for each, as do the likely outcomes.

*The Olympics*⁹

As a flag bearer for international relations, human achievement, and, historically, racial equality, the Olympics emphasize social causes, including the global environment. At the same time, the International Olympic Committee (IOC) is an organization with more than 100 members whose economies, populations, political contexts, and cultures vary enormously, and thus reaching consensus by all members may be a daunting challenge. Nevertheless, the IOC, with its large global reach, is in a unique position to unite diverse populations around a common theme – sport. This is clear from the institution's charter, which states "Olympism seeks to create a way of life based on the joy found in effort, the educational value of good example and respect for universal fundamental ethical principles."¹⁰ Due to scale, size, and global awareness across diverse populations, the Olympics and FIFA's World Cup are the only types of sporting events likely to significantly influence action on a global externality such as climate change.

Although the Olympic Movement has long stressed ethical and socially progressive standards, including a commitment to the environment,¹¹ we focus on the present and recent past: the 2012 and 2016 Games,¹² where even before August 2016 Rio had been beset with political problems of political corruption, economic setbacks in terms of high rates of inflation and recessionary conditions, and concerns over water quality for some events and spread of the Zika virus.

As with the quadrennial proclamation at the concluding ceremonies by the IOC president that these were "the Greatest Olympics Ever," "Towards a One Planet Olympics" emerged as a theme for 2012, and many in London promised that with sustainability and carbon neutrality front and center, it would deliver the "greenest Olympics ever." The priority target areas were climate change, biodiversity, waste, inclusion, and healthy living. With respect to green energy and technology related to climate change, London pledged that 20 percent of newly installed capacity in Olympic Park would come from renewable sources. Reductions in water use, a zero-waste plan, low-carbon and recycled building materials, and a "car-free" transportation objective addressed these specific components. In addition, the Olympic Park itself was planned to incorporate wildlife habitats and nature preserves, a net gain in publicly accessible green space.

Ex post, given London's ambitious commitments, there were inevitably shortfalls and trade-offs. For example, given the sheer scale of the various construction projects and processes, ultimately commitments to emissions reductions were met through a portfolio of carbon-saving and reduction projects, rather than from specific technologies. And although many local transportation objectives were feasible, factoring in other aspects – the emissions generated from

spectators coming to London for the Games, the inconveniences and congestion around the city – the overall result is less clear.

When IOC members voted to award the 2016 Olympics to Rio de Janeiro, it was with a sense of both excitement – a vibrant city and the first time South America had served as host for the Games – and trepidation; known corruption and violence, grinding poverty, water pollution, and potential environmental damage – deforestation – was a concern from the outset. Apart from the usual worries over timely completion of facilities and problems with congestion, added tension leading up to the 2016 Games was the IOC’s decision to bar a substantial number of Russian Olympic athletes (and subsequently their entire Paralympic squad) due to evidence of state-sponsored doping. The stellar, thrilling achievements of the participants in swimming, track and field, and other competitions were often overshadowed by embarrassments over unsold seats, the displacement of residents in favor of the Barra Olympic Park complex (pictured in Figure 3.1), budgetary exigencies that threatened the Paralympic Games component, and the scandal and saga surrounding an alleged attack on four members of the U.S. swim team. In addition, midway through the swimming and diving portion, algae-related problems in the diving pool threatened to impart an entirely new twist to the “greenest games ever” mantra.

The Rio bid committee put forth a nine-point Sustainability Management Plan (SMP) and ambitious environmental agenda to address and commit to water treatment and conservation, environmental awareness, use and management of renewable energy, carbon neutrality, protection of ecosystems and biodiversity, sustainable design and construction, and solid waste management. One of the SMP’s overarching key objectives was to lessen the environmental footprint, and it organized this objective around four themes or areas: transport and logistics, sustainable construction and urban improvement, environmental conservation and clean-up, and waste management. If, by hosting the Olympic Games, Rio hastened its path towards development



Figure 3.1 Barra Olympic Park, Rio de Janeiro, Brazil (“Aerial view of Barra Olympic Park in May 2016, looking southward” is licensed under CC BY 3.0 BR)

with investments in infrastructure and pollution control, there exists the potential to achieve both private return to local investors and social benefit for others.

In general, evidence suggests that in terms of economic impact and development, a city's or nation's having some "Olympic strategy," either serving as host locale or a financial commitment to increasing the success of its own athletes in these competitions, does not usually constitute a wise economic investment.¹³ Although the Olympic Games may attract additional private dollars that may have gone to other causes or locations and may expedite the clearing of political hurdles, there may be efficiency gains in targeting public investment directly towards other independent social or public goods like education, infrastructure, the environment, health care and poverty, rather than indirectly through Olympic Games.

The National Football League¹⁴

In terms of audiences, revenues, and franchise values, American football is largely the face of U.S. professional sports, and its environmental practices are generally representative of team-based athletics in the United States.¹⁵ Most greening efforts in the NFL appear to be led by stadium owners, with each newly constructed or renovated stadium touting statistics for clean energy usage, diversion of waste, and green building certification.¹⁶ Many of these measures emerge from the synergy between green technologies and profit, as new efficient systems, from lighting to ventilation, have proved to be attractive sources of direct private return and corporate sponsorship.¹⁷ External factors likely play a role in this market. Revenue from energy technologies can be unnaturally high due to government subsidies, particularly for solar projects, which can drive investments above and beyond what would be made for motivations only related to direct return. Simultaneously, implementation costs are often low for owners because taxpayer financing for new stadiums is so common. This is also where barriers to market entry create the potential for rent seeking. Lack of competition lets teams threaten to leave cities without favorable deals, and so we see the average NFL stadium is in its early twenties, whereas an English Premier League stadium can boast nearly eight decades.¹⁸

However, the question remains as to why a league or individual team or facility owner would invest in large-scale greening efforts where the returns are largely societal and not captured by the individual investor. In part, there are always concerns about the environmental impact of large sporting events, and showcasing these efforts, as the NFL does at the Super Bowl, garners the most attention. For any individual team or facility, the sustainability measures demonstrate a commitment to community and modern technology and can attract high-profile events like the Super Bowl. In this fashion, green practices generate additional revenue indirectly through fans. It is easy to see how initiatives such as locally farmed menus and digital sustainability graphics might appeal to the modern fan's preferences and allow for higher prices.¹⁹ Furthermore, by aligning its practices with shifting social views towards the environment, the NFL and its teams can attract new fans. Most environmental surveys indicate that female, younger, and wealthier people care most about the environment, all of whom would be most welcome to the NFL as new fans.

One could measure the full economic value of greening efforts to demonstrate that the social value of environmental improvement may be worth the investment, and as a result, a sports team's generation of environmental services is a return on civic investment in stadiums and sports infrastructure. In economic terms, we would question whether the investments are at a level that is optimal for society and, if not, should the leagues and teams be encouraged to do more either through additional policy incentives or regulations.

Automobile racing²⁰

An unlikely sports industry for greening, yet perhaps one with the most opportunity, is automobile racing. NASCAR launched the NASCAR Green program in 2008 as a comprehensive effort to reduce environmental impacts of everything from fossil fuel combustion to waste from race day events. The program has a strong focus on the use and promotion of alternative fuels, along with significant fan education programs. To better understand fan attitudes and behaviors related to environment, NASCAR commissioned several surveys of their fans to compare to the general population (NASCAR, personal communication, 2016). In a 2015 study, NASCAR found that their fans are environmentally aware, with the majority expressing an obligation to protect the environment and a personal responsibility toward climate change mitigation. Four out of five NASCAR fans surveyed were aware of the NASCAR Green program, and most of those recognized it as a sign that NASCAR cared about the environment. A significant component of NASCAR Green involves the transition to alternative fuels, mainly ethanol. This appeared to have significant effect on fans, as most supported the use of ethanol blends in NASCAR race cars, as well as their own cars. In addition, NASCAR fans were 35 percent more likely to recognize ethanol as a renewable fuel than non-fans, likely due to the support and promotion of ethanol by NASCAR.²¹

The direct private return of partnerships in a transition to alternative fuels may be limited in the near term, there are clear social benefits, and sources of indirect private return given fan awareness, involvement, and adoption beyond spectators of the sport. The exposure of new automobile technology to a large and interested fan base will be attractive to corporate sponsors and potentially new groups of fans, both of which contribute to indirect private returns, in addition to social benefits from the conversion to alternative fuels.

Individual sports and associations

Although there are many individual sports with their own underlying governing associations, two stand out in terms of global participation by players and interest and income levels of their fans: golf and tennis. The leagues (i.e., PGA, LPGA, USTA, WTA) and facilities often lead the way in terms of environmental action, but athletes compete individually and often obtain sponsorship at an individual level. Unlike league sports, the players can negotiate equipment and clothing contracts individually, as well as succeed or fail in competition individually, drawing fans at the athlete, rather than a team level. Although golf and tennis are both individually played sports, the environmental initiatives often appear motivated at the league or association level. We treat the two sports in turn.

Golf

Golf, as an exclusively outdoor sport dependent on green spaces, is in a unique position with respect to environment. Although the sport is dependent on the aesthetics of the natural landscape, it has also come under intense criticism for not adhering to the environmental needs of local communities and ecosystems.²² From excessive water use in drought-stricken or desert regions to the destruction of coral reefs from excessive fertilizer use (“Scientists Report,” 2013), golf has taken its hits. At the same time, given the dependence of the sport on natural resource quality and the relatively wealthy fan and participant base, golf is ideally positioned to invest in water conservation, sustainable landscaping, and environmental education.

The Professional Golfers' Association (PGA), players, and individual venues that host tournaments note that they support more than 3,000 charities, with a combined total giving in 2014, as announced by the PGA, of \$133 million, and more than \$2 billion over the association's lifetime (which it compared to the NFL's \$370 million given to charity in the last 40 years). These efforts are divided among several headings: youth, the military, education and leadership, community, volunteerism, health/medical, disaster relief, and the environment. The PGE Tour notes that it "supports a range of environmental causes," and that 15 of the tour's clubs are certified as "Audubon Cooperative Sanctuaries," and two tournaments, the Waste Management Phoenix Open and the Deutsche Bank Championship, are "devoted to producing green events." In 2016, the PGA Championship at the Baltusrol Golf Club in Springfield Township, New Jersey, boasted 10 tons of food recovery to keep it from landfills and feed the needy.²³

Beyond the PGA, golf associations are actively involved in understanding and lessening the sport's environmental impact. The World Golf Foundation has established an industry-wide initiative to support environmental responsibility in the design and management of golf courses. The Environmental Institute of Golf (EIFG), founded by the Golf Course Superintendents Association of America (GCSAA), supports research and advocacy toward golf courses as beneficial uses of land, promoting economic and environmental value to communities. The international non-profit Golf Environment Organization (GEO) offers resources for environmental measurement and improvement for golf courses, developments, and professional and amateur tour events, as well as an eco-label for golf courses that achieve environmental targets. Additionally, companies that support landscaping and associated products like turf grass and fertilizer compete for lucrative golf course deals and have an interest in promoting their products as environmentally friendly. For golf, it is clear that environmental sustainability is a necessary component of a luxurious game.

Tennis

Similar to golf, tennis is an individual sport, yet we see decision-making on behalf of the sport at the league level by the Association of Tennis Professionals (ATP) and the Women's Tennis Association (WTA). In the United States, the United States Tennis Association (USTA) manages all professional and junior operations and runs the U.S. Open, one of four major events comprising the Grand Slam (the other three are the Australian Open, the French Open, and Wimbledon). Although tennis is comparable to golf with the major events held on different continents, the locations and venues of each event are permanent and have an established history and legacy. The permanency and certainty of the major event venues, along with the large global and relatively higher income fan following of tennis, lends itself well to more significant environmental investments, which require longer payback periods.

The USTA, in conjunction with the NRDC (the Natural Resources Defense Council, a leading environmental advocacy group) and the Green Sports Alliance, appear to have been quite aggressive on the environmental front and activities. As the host for the U.S. Open each year, the USTA engages in recycling and composting programs, suggests that tournament attendees use mass transit, pays attention to food and service ware, encourages fans to lessen their impact on the environment, and engages in a number of environmental outreach efforts. It also participates in carbon-offset programs. It notes "the responsibility of lessening the U.S. Open's environmental footprint and helping to create a sustainable future." The other major events have also invested in sustainability, from a 95 percent waste diversion rate and locally sourced strawberries at Wimbledon; LEED Gold certification of all buildings at Melbourne Park, home of the Australian Open; to a promotional video featuring the top tennis players in the world to

encourage fans to sort recyclable and compostable waste into the appropriate bins at the French Open at Roland Garros.

College athletics

It is important to recognize one other major “player” in the world of sports: college athletics in general and big-time college athletics in particular, a uniquely American enterprise. Although technically this involves non-profit bodies – the National Collegiate Athletic Association (NCAA) and member institutions – their behaviors with regard to product development, marketing, and protecting property rights largely mirror other commercial entities. Many of the same factors at the professional level are also applicable to campuses, but added dimensions make college sports unique when it comes to the environment.

First of all, one overarching entity, the NCAA, governs most of what occurs in this “industry,” including its holding both monopoly and monopsonistic controls, power for which it is beholden to the government to maintain. Second, there are arguably more constituencies involved in collegiate sports than their professional counterparts – state and federal governmental units, faculty and administrators, students, alumni, and local communities. Pressures are often exerted on these institutions of higher education externally and internally to respond to, or at least be sensitive to, popular social and environmental matters, including race and ethnicity, gender and gender identity, recycling, energy use and dependence on fossil fuels, and sustainability. Thus, because of these varied constituencies and the underlying non-profit status, one might expect to find more awareness of, and attention paid to, environmental considerations in these academic enclaves than in ranks of professional sports.²⁴ In addition, given the pre-existing “collective” nature of college athletics – students, faculty, and administrators are already in one dense location (that is, the campus) – costs of organizing, or protesting, are lower.

In terms of a “sustainability” agenda and related activities, there is a strong focus in college athletics on waste management and the adoption of “zero-waste” events or facilities. Given the vast amount of resources required to maintain top-flight facilities, fly their teams around the country, and host contests on campus for fans (e.g., alumni, students, and “townies,” most of which constitute high-profile and very public exposure), recycling and waste diversion programs are the lowest-hanging “green” fruit. Further, there is a direct connection to fans and students through recycling or waste management education and implementation. At the same time, these types of fan-engaged activities can be challenging in college or any sports. People attend sporting events to be entertained and are often not focused on separating waste, reducing their environmental footprint, or being educated on anything beyond sports. College sports have a greater opportunity to address these challenges by engaging students and educated alumni, with a vested interest in supporting their educational institutions.

The NCAA and collegiate sports have been extremely active in extending environmental activities to construction of green buildings, energy conservation, and adoption or generation of renewable energy. In August 2013, the NRDC issued a 100-page report – *Collegiate Game Changers: How Campus Sport Is Going Green* – to document “case studies of North American sports industry’s most successful greening initiatives.”²⁵ This second volume touts advances in energy efficiency and renewable energy, recycling, composting, water conservation, and green building practices, among other activities; includes case studies on 10 campuses, key findings from a survey of collegiate sports departments, and chapters of why greening campus sport matters; the basis for greening sports; and recommendations for implementing successful programs. More and more colleges are adopting sustainability in sports, connecting vital components of institutions’ operations through student actions as athletes, fans, researchers, and stewards of their

campuses. Students, as athletes, can strive to reduce environmental impact through competitions across sports teams,²⁶ whereas fans can engage in game-day events and challenges, and conduct the associated research to measure landfill diversion, water use reduction, and energy conservation. Colleges and universities have incentives to create awareness through their sustainability actions that could lead to indirect returns in attracting environmentally minded individuals as students, staff employees, faculty members, and sports fans.

Summary, conclusion, and agenda for further analyses

During the last 60 years, economics in general, the economics or business of sports in particular, and environmental economics contributions and concerns have come together in various private and public policy arenas. In broad strokes, the sections in this chapter first lay out some of the principles of neo-classical economics, then provide a primer on the economics of sports, including marketing and demographic considerations. The chapter then moves in parallel fashion through the basic tenets of environmental economics, followed by a more detailed examination of the intersection of these three components – economics, sports, and the environment – into the theoretical underpinnings, as well as applications to specific well-known and popular activities, such as the Olympics, selected professional league and individual sports, and, due to its importance in the United States, college athletics.

At the end of the day – or, in this case, the chapter – what could come next or be added, and how to proceed? We close with some suggestions.

First, one avenue for further research is to investigate the extent to which the embracing of “green” initiatives varies by type of sport, such as whether these activities occur more frequently and with a higher profile in competitions that are more local in nature as opposed to global, that are enjoyed by higher-income spectators, and other dimensions of this heterogeneous landscape.

A second agenda would be a comparison of both the pace and extent of environmental actions, which usually contain some present-versus-future considerations, and thus “discounting” may dilute the immediate urgency compared with those that address other contemporary social or political causes such as discrimination by gender or race, inequality, or political system.

A third area to pursue would be a comparison between the inculcation of environmental actions in economies that are more market oriented and have a small governmental footprint with those in which the state plays a larger, controlling role, and in sectors that are more competitive as opposed to those that by practice or statute enjoy more protection. And to the extent that in competitive markets firms must to some extent conform to the preferences of their customers – in this case, sports fans – how much of current and proposed environmental programs appear to have “bottom-up” versus “top-down” origins?

Regardless of the path(s) forward, it is important to emphasize the measurement of environmental outcomes to better assess the progress that is being made, as well as evaluate benefits and costs to make the case for certain environmental actions across sports industries and actors. Finally, much of this begs two overarching questions: From the viewpoint of the franchise, league, or participants, does “being green” or “going green” represent profit-maximizing behavior, or do the benefits largely accrue to society as a whole rather than those immediately involved? And to what extent is the commonly employed term “sustainability” applicable to these industries or set of activities?

Whatever the answers to those questions or subsequent approaches, this is a rich field – or pitch, court, or ice rink – ripe for continued study, and will likely remain so for the foreseeable future.

Notes

- 1 The authors acknowledge and thank their research assistants, Lindsey Currier and Tsai-Wei Chen, for their valuable contributions and comments.
- 2 Another fundamental economics principle or tradeoff is how individuals, firms, and societies weigh the present or present value (or present discounted value) of costs and benefits in their decision-making. This has particular applicability in environmental economics.
- 3 The term “economic rent” denotes the difference between the actual payment made to the owner of an input, such as capital, land, or labor, and the payment that would ordinarily be required to bring it forth. Economic rent is usually the result of natural or contrived scarcity and occurs when entry can be blocked or there are no good perceived substitutes for the particular product or labor. For example, a closed league in sports prevents another franchise from entering that industry, and a superstar athlete or entertainer arguably has few perceived substitutes.
- 4 An extension of the term “rent” in economics is “rent seeking.” Rent seeking is a process, usually political, in which a group or firm – in this case, a sports franchise, league, or global sports entity – lobbies some level of government for concessions or subventions that are largely not designed to enhance social benefits or social capital, but to redistribute money from the public – taxpayers – to the organization or team owner itself. This is also known as the “special-interest effect.”
- 5 For example, with respect to the former, the city of Chicago hosts annually its Air and Water Show along the lakefront; Thanksgiving and St. Patrick’s Day parades in the city center, and the Pride Parade on the north side; two festivals in Grant Park, the Taste of Chicago and Lollapalooza, food and music, respectively; and periodic evening concerts, which are held in Soldier Field, Wrigley Field, or on Northerly Island. In addition, there are a plethora of neighborhood activities. Chicago has also been the site for the NATO summit and national political conventions.
- 6 The term “income elasticity” refers to the tendency on the part of consumers to spend money disproportionately on some goods when their incomes rise and shy away from others. Thus one might suspect that for families, Nordstrom, foreign travel, and elite private higher education have high income elasticities, whereas McDonald’s, Wal-Mart, or cheaper cuts of meat have low income elasticities.
- 7 Over time there have been at least three threads to handing negative externalities. The first is traced back to Cambridge economist A. C. Pigou: calculate the social or environmental costs of an activity and impose a tax – a “corrective tax” – that reflects the amount of that damage. The second stems from Nobel Laureate Ronald Coase (1960) and his landmark journal article, “The Problem of Social Cost”: if parties can negotiate over the allocation of resources, they may be able to solve externality problems privately. This has become known as “the Coase theorem.” Political economist and Nobel laureate Elinor Ostrom addressed these problems through a more bottom-up approach of cooperation based on community standards or values. Nobel laureate Paul A. Samuelson is often credited with the first theoretical definition and explanation of public goods in his 1954 *Review of Economics and Statistics* article, “The Pure Theory of Public Expenditure.” Scholars have debated what constitutes a public good, as well as public versus private approaches and solutions to it for decades.
- 8 For the standard argument of the lack of economic return on public financing of stadiums, see the recent research by Gayer et al. (2016). On the proverbial other hand, Crompton (2004), provides an alternative rationale for public subsidies of major league sports facilities in the form of spillover benefits from community visibility and engagement.
- 9 Our focus in this subsection is on the Summer Olympics. The 2014 Winter Games in Sochi, Russia, in terms of scope or scale and outlays – more than \$50 billion, by some estimates – were unlike any Winter Games before then, or more to be seen in subsequent years. Pyeongchang, South Korea, will host the 2018 Games, but had won that right before Sochi unrolled. The 2022 Winter Olympics will be held in Beijing, to a large extent because the cost of the 2014 Games scared off most other bidders, including Oslo, Norway. Lillehammer, Norway, host in 1994, is often referred to the first “green” games because of their attention to natural materials, energy conservation, mass transit, and recycling.
Vancouver, British Columbia, was one of the largest cities to serve as host for the Winter Games. In addition, along with a half-dozen U.S. cities, it is arguably one of the most out-front progressive North American cities in terms of social and environmental matters. And the organizing team did not disappoint in its priorities. Best practices in building design and construction techniques, zero waste management and zero net emissions strategies, and a sustainable development legacy were integral parts of Vancouver’s bid and planning. Even the icons – emblem for the Games, the torch, and the mascots – entailed environmental themes.

- 10 The Olympics Charter: www.olympic.org/Documents/olympic_charter_en.pdf
- 11 Although the IOC lacks a mandatory environmental commitment in Olympic bids, there is dedicated effort to sustainable practices and messaging for the Games: www.olympic.org/sustainability
- 12 The first two 21st-century locations were Sydney in 2000 and Athens in 2004; Athens is generally considered a failure on environmental criteria. The massive scale, including expenditures of the Chinese government of more than \$45 billion and more guarded control, made the 2008 Games in Beijing unrepresentative of others that preceded or followed, as well as simply more difficult to analyze. Tokyo will be the site of the Summer Games in 2020; the 2024 city will be chosen in autumn 2017.
- 13 See Zimbalist (2015) and Baade and Matheson (2016).
- 14 The other major North American professional league sports – baseball (MLB), basketball (NBA), and ice hockey (NHL) – all have various, independent green initiatives. Of the four, the NHL, with the smallest fan base, has arguably made the strongest commitment to sustainability initiatives, both by encouraging and supporting team-led initiatives but also through league-wide leadership. The NHL operates NHL Green in partnership with the Green Sports Alliance to inform and engage fans in league-wide greening efforts through information, activities, and player advocacy. Among the league's many environmental investments are food recovery and food waste reduction, tree plantings, energy-efficient lighting in arenas, and fan-facing programs such as the "Energy Playbook," which offers tips to fans on how to engage with the NHL's efforts (NHL, 2015). Further, the NHL is the only professional sports league in the United States to issue an annual Sustainability Report on collective goals and achievements related to energy, water, waste, and other sustainability categories.
- 15 The NFL also has an aggressive marketing agenda to expand its footprint into Europe, Mexico, and Asia.
- 16 Leadership in Energy and Environmental Design (LEED) is the most commonly used certification for green building and as of October 2015, there were at least 30 LEED-certified sports stadiums in the United States. Refer to Chapter 15 for more details on environmental building certification.
- 17 A prime example is the new home of the San Francisco 49ers and Super Bowl 50, Levi's Stadium in Santa Clara, the first sports stadium to achieve LEED Gold certification, with region-specific features such as drought-tolerant turf, rainwater harvesting, and a solar panel "green roof."
- 18 Haddock, Jacobi, and Sag compare the North American and British systems in their 2013 paper "League Structure and Rent-Seeking – The Role of Antitrust Revisited."
- 19 These measures can be seen in action in Levi's Stadium in Santa Clara, California.
- 20 There are several categories of auto racing, including Formula One ("Grand Prix"), IndyCar, and NASCAR (National Association for Stock Car Auto Racing). Our discussion is largely limited to this last, family-owned grouping, the most popular North American circuit.
- 21 Also in the world of automobile racing, Formula E is a global, fully electric racing series, which showcases state-of-the-art electric vehicles in cities around the world. Formula-E publishes an annual sustainability report of all environmental impacts and outline areas in which a transition to electric vehicles can reduce carbon footprints.
- 22 The environmental impact of luxury golf courses was the subject of the recent documentary film *A Dangerous Game*.
- 23 "10 Tons of Food Recovered from 2016 PGA Championship," Green Sports Alliance, August 19, 2016.
- 24 Title IX of the 1972 Higher Education Act – mentioned earlier – represents a significant fork in the road for colleges and universities when it comes to college athletics, and it has led to the increased participation of female students in inter- and intra-collegiate sports. This demographic change may well have many implications, including as it relates to, or leads to changes in, environmental policies on college campuses.
- 25 See the Resources page of the Green Sports Alliance for the full report "Collegiate Game Changers: How Campus Sports Are Going Green," August 2013.
- 26 See Bulldog Sustainability at Yale University for the "Green Team Certification" as an example of competing to green their sports team operations (Yale University, 2015).

References

- Baade, R. A., & Matheson, V. A. (2016). Going for the gold: The economics of the Olympics. *Journal of Economic Perspectives*, 30, 201–218.
- Coase, R. H. (1960). The problem of social cost. *The Journal of Law & Economics*, 3, 1–44.

- Crompton, J. (2004). Beyond economic impact: An alternative rationale for the public subsidy of major league sports facilities. *Journal of Sport Management*, 18, 40–58.
- Gayer, T., Drukker, A. J., & Gold, A. K. (2016). *Tax-exempt municipal bonds and the financing of professional sports stadiums*. Washington, DC: Brookings Institution Press.
- Haddock, D. D., Jacobi, T., & Sag, M. (2013). League structure & stadium rent seeking – the role of antitrust revisited. *Florida Law Review*, 65, 1–72.
- National Hockey League. (2015). *NHL fan energy playbook powered by Constellation*. Retrieved from www.nhl.com/news/nhl-fan-energy-playbook-powered-by-constellation/c-39760
- Rottenberg, S. (1956). The baseball players' labor market. *The Journal of Political Economy*, 64, 242–258.
- Samuelson, P. A. (1954). The pure theory of public expenditure. *The Review of Economics and Statistics*, 36, 387–389.
- Scientists report golf courses damage coral reefs in before-and-after study at Bahamas development. (2013, June 3). *PR Newswire*. Retrieved from www.prnewswire.com/news-releases/scientists-report-golf-courses-damage-coral-reefs-in-before-and-after-study-at-bahamas-development-209903421.html
- The White House (2016). *Fact sheet: Tackling climate change through sports*. Retrieved from www.whitehouse.gov/the-press-office/2016/10/06/fact-sheet-tackling-climate-through-sports
- Yale University. (2015). *Green team certification*. Retrieved from <http://bulldogsustainability.yale.edu/projects>
- Zimbalist, A. (2015). *Circus Maximus: The economic gamble behind hosting the Olympics and the World Cup*. Washington, DC: Brookings Institution Press.

4

ETHICAL FOUNDATIONS FOR SUSTAINABILITY IN SPORT¹

Danny Rosenberg

This chapter will examine the ethical grounds for sustainability in sport, with particular reference to the growing awareness of our ethical responsibilities toward the environment. For a number of decades, the term sustainability has gained currency and refers to domains whereby human and non-human developmental goals and strategies are determined and realized. Sustainability is often understood in the contexts of the environment, society, and economy. Even though these three spheres are deeply intertwined, Shearman (1990) argues the latter two contexts are dependent on the first. Therefore, economic growth and social justice are parasitic on how we respond to and achieve environmental sustainability. This is so because human beings and the Earth are finite entities and exist interdependently.

For most of human history, people have viewed nature as an unlimited resource to be exploited for our own economic and social benefit. This prevailing attitude has led to a host of current problems in relation to pollution, clean water and air, waste creation and disposal, shrinking rain forests and ecosystems, biodiversity, global warming, acid rain, inefficient land use, urban sprawl, population explosion, endangered plants and animals, shortages of and genetically modified food sources, and climate change. We now recognize the environment is of vital concern to the current and future well-being of society and individuals and has far-reaching consequences for other species and nature on a global scale. But what does sustainability have to do with sport and its future?

Modern sport has an intimate and ultimate interest in the environment and makes a significant impact on issues related to the welfare of the economy and society. The notion of place or geography is a constitutive feature of what makes sport possible. Each sport is circumscribed by physical space and certain environmental conditions. The rules of sport define how the environment and human-made structures contribute to play to create circumstances whereby games are played under fair conditions for all, at least in principle. If sport is to continue to captivate the interest of human beings, it cannot do so without addressing and being committed to sustainability in all its forms, but primarily to its concern for the environment.

The development of sport, whether for public or private purposes, requires serious attention to the health and welfare of the environment and its influence to improve the economic and social lives of people today and into the future. Whenever public space is devoted for sport and other recreational pursuits, sustainability issues like clean water, air, and land and waste disposal are fundamental factors related to planning and design. For example, a major set of criteria for Olympic Games bids

includes environmental protection and meteorology assessments (International Olympic Committee, 2008b; see Chapter 8 for more details). This is but one example of the connection between sport and sustainability and the need for sport leaders and the public to understand and attend to this dimension of sport. Despite the significance and manifestations of sustainability, both generally and in sport, I will argue that sustainability basically involves making moral choices about how we ought to live and behaving ethically to realize fundamental, shared human values and goods.

In the remainder of this chapter, a more detailed, although not exhaustive, examination of the ethical foundations of sustainability in sport will be presented. I will begin by briefly characterizing the concept of sustainability. The next section will address the ethical grounds for sustainability of the environment. The fourth section will focus on environmental sustainability and sport, and the final section will draw several conclusions about this topic.

A characterization of sustainability

The term *sustainability* has been in use for several decades and is often defined in imprecise, ambiguous terms. To date, there is no consensus on what it means. Some have called the word “elusive,” “contested,” and a “slippery” concept and employ it, as it will be here, interchangeably with sustainable development (Jacobs, 1999; Lélé, 1991; Shearman, 1990). At times, sustainability refers to the process of maintaining and continuing positive change in the economic, ecological, and socio-cultural realms of human and non-human life. It is also linked to the designation of ideals and values and operational objectives, means, and assessments whereby sustainable conditions can be identified and presumably achieved. Kates, Parris, and Leiserowitz (2005) define sustainable development by addressing the history, goals, indicators, values, and practice of this expression, and their approach will be adopted in the section.

As noted elsewhere in this handbook, the 1987 Brundtland Report that emerged from the United Nations Commission on Environment and Development is the most widely cited definition of sustainable development, which is development that “meets the needs of the present without compromising the ability of future generations to meet their own needs” (World Commission on Environment and Development, 1987, p. 8). In addition to continuity and intergenerational matters, the report elaborated on the need for environmental protection and economic improvement to better humankind.

After the Brundtland Report, a major international meeting on sustainability called the Earth Summit was held in Rio de Janeiro in 1992 under the auspices of the United Nations Conference on Environment and Development (UNCED). Although the focus of this conference was on environmental sustainability, it also addressed issues related to poverty, women, and health. The summit produced an action plan known as Agenda 21, a declaration of environmental and developmental principles, a statement of forest principles, and two binding conventions on climate change and biodiversity (UNCED, 1992).

Ten years after the Rio Earth Summit, a World Summit on Sustainable Development (WSSD) took place in Johannesburg, South Africa. The official report of the 2002 WSSD encouraged “the integration of the three components of sustainable development – economic development, social development and environmental protection – as interdependent and mutually reinforcing pillars (UN, 2002, p. 8). These three pillars, and some include culture as a fourth pillar, are enshrined in most definitions of sustainability and are reflected in the outcomes of the 2002 WSSD. Thus, key areas within the plan of action included water and sanitation, energy, global warming, biodiversity and natural resources, trade and global economy, health, and corporate accountability (Shah, 2002). By 2002, the concept of sustainability was fully entrenched in the narrative to better the world and the lives of people.

The next major gathering on sustainability was the Rio +20 United Nations Conference on Sustainable Development held in Rio de Janeiro in June 2012. The main issues addressed were the building of green economies and the elimination of poverty, assistance for developing countries to implement development paths, and improving international coordination of sustainable development (UN, 2012). By the end of the three-day conference, an agreement called *The Future We Want* fell short of expectations. Thus, climate change enforcement lacked teeth, powerful countries asserted their authority, government commitments were lukewarm, and many grassroots organizations and corporations pursued their interests without government approval (Romero & Broder, 2012). The Rio +20 Conference continued to expand the meaning of sustainable development by addressing more diverse issues.

Another approach to define sustainable development refers to the identification of goals it tries to achieve. In September 2000, after a three-day United Nations summit in New York City, the Millennium Development Goals (MDGs) were produced with a 2015 deadline. The eight goals were (1) eradicate extreme hunger and poverty; (2) achieve universal primary education; (3) promote gender equality and empower women; (4) reduce child mortality; (5) improve maternal health; (6) combat HIV/AIDS, malaria, and other diseases; (7) ensure environmental sustainability; and (8) develop a global partnership for development (UN, 2000b). A 2015 MDGs summary report indicated improvement was realized in many areas within each goal (UN, 2015a). However, the report also acknowledged gender inequality persisted among the poor and in the workforce; large gaps remained between rich and poor countries and urban and rural areas; climate change and environmental degradation continued to pose serious problems; conflicts around the world hampered human development; and millions still lived in poverty without access to basic services. As the MDGs and report show, the goals-oriented approach incorporated the three pillars of sustainable development on many fronts and broadened the meaning of sustainability.

A recent goals-oriented approach to sustainability was implemented in September 2015 when the United Nations General Assembly adopted new guidelines called *Transforming Our World*. This document identified 17 sustainable development goals (SDGs) to be attained by 2030, including 169 targets and 304 compliance indicators (UN, 2015b). The 17 goals are

- (1) elimination of poverty,
- (2) end to hunger,
- (3) good health,
- (4) quality education,
- (5) end to gender inequality,
- (6) improve water and sanitation,
- (7) accessible affordable energy,
- (8) economic growth,
- (9) resilient infrastructure,
- (10) reduce inequities,
- (11) create sustainable cities,
- (12) sustainable consumption and production,
- (13) combat climate change,
- (14) conserve oceans,
- (15) enhance biodiversity and preserve forests,
- (16) promote peace and justice, and
- (17) forge partnerships.

These ambitious SDGs have been criticized for not being bold enough and being contradictory between their economic targets and sustainability goals.

In addition to goals, sustainable development is sometimes defined by how it is measured through different indicators and indexes that try to determine whether or not a sustainability project meets its goals. Because there are thousands of sustainable development projects at the local, national, and international levels, tens of thousands of indicators have been generated to evaluate the efficacy of sustainability (Kates et al., 2005). As noted earlier, the 2030 SDGs produced 304 indicators. Such indicators are useful to characterize sustainability because they explicitly and implicitly provide the rates and degree of progress of sustainable goals, they identify stakeholders and sustainable impacts like justice, and they account for the temporal and future-oriented dimensions of sustainability (Fredericks, 2012, 2014).

Underlying any definition of sustainable development are values. A value is typically a belief in or expression of what is desirable in an ideal, object, or behavior worthy of pursuit. The difficulty with stating a specific list of values is related to the following question: What values should be on the list and is the list thorough and sufficient? Perhaps the clearest statement of values that underlie the meaning of sustainability is contained in the 2000 Millennium Declaration. The six basic values are (1) freedom, (2) equality, (3) solidarity, (4) tolerance, (5) respect for nature, and (6) shared responsibility (UN, 2000a). Again, this list of values may be adequate for some and fall short for others, but it does, to a large extent, underscore the meaning of sustainability through its commonly shared tenets and what it is trying to achieve.

Finally, one may understand sustainable development in relation to its instantiation in practice that gives concrete expression to the features listed earlier. However, more than this, according to Kates et al. (2005), sustainability must be understood as a social movement that promotes a particular ideology and involves thousands of government and non-governmental agencies, grass-roots organizations, community civic groups, trade unions, educational and religious bodies, corporate responsibility associations, and global solidarity movements. The practice of sustainability is also influenced by geography and affluence, or lack thereof, and is demarcated and set as a priority unevenly around the world. Other parts of the movement try to curtail excessive consumption in rich societies by encouraging people to make do with less. The idea of sustainable development is integrated in many international institutions like the United Nations, World Trade Organization, International Monetary Fund, and World Bank, as well as the International Olympic Committee (IOC) and other international and national sports organizations. Sustainability is implicated in the scientific community and technology industries that study and provide real solutions to the issues and problems posed by the three pillars of sustainable development. In fact, the latter have provided the impetus to take seriously and reach just and lasting compromises between the well-being of the environment, economic growth, and improving the lives of people.

In sum, sustainability will likely remain an ambiguous, fluid concept that encompasses many issues and challenges in diverse contexts. Yet despite its many interpretations, characteristics, and criticisms, there is acceptable agreement among most people that it is a positive ideal and the processes it establishes are worth pursuing.

Ethical grounds for environmental sustainability

As mentioned in the introduction, this chapter will take the position, arguably so, that environmental sustainability supports and is the basis of the economic and socio-cultural pillars of sustainable development. As such, the main focus of the remainder of this chapter will focus on sustainability of the environment, ethics, and sport.

Concerns about the environment and what to do about issues related to it are decidedly contentious matters. The first item in the ecological sustainability debate is the establishment of the need to be concerned. Although most can agree that climate change, pollution, biodiversity,

habitat, population, lifestyle, and technology are important factors that influence contemporary life in profound ways, the extent of their impact on the environment, society, and the economy leads to much disagreement. There are a number of schools of thought when it comes to the ethics of environmental sustainability, and only three prominent approaches and their variants will be examined here as discussed by Curry (2006) and others.

The first of these is called light green or shallow ethics and exemplifies an anthropocentric perspective (Barry, 2002). This human-centered approach may be understood in at least two senses. The first merely states that all values are generated by and for human beings as a factual matter. Therefore, any ecological sustainability discussion about the Earth and non-human beings will always involve human-centered interests and priorities. However, what this view does not capture is the idea that human beings may not be the core recipients or subjects of human interests. If non-human beings and entities are never given priority by people, then anthropocentrism takes on a second sense whereby it discriminates for no good reason and ignores a “concern for nonhuman lives and life forms for their sake rather than for our own” (Wenz, 2001, p. 13; see also Chapter 26).

The latter meaning of anthropocentrism characterizes light green ethics. On this view environmental sustainability issues are identified and dealt with as means toward the fulfillment of human goals, desires, and aspirations (Kohak, 2000). Human beings are the only ones capable of acting on behalf of nature and non-human beings to sustain the totality of life on Earth. Whereas non-human animals typically fend for themselves and nature just is, people have the capacity to engage other sentient beings and non-sentient entities to ensure human life flourishes (Davidson, 2000).

It is rather clear that light green ethics operates from a self-interested perspective where concern for the environment is limited and exploitation of resources is permitted to a certain degree. Encroaching on nature is mostly fueled by consumerism – the notion that human well-being is achieved by greater wealth and increased levels of consumption (O’Hara, 1998). The anthropocentric view is also supported in traditional religious thought. In the modern age, utilitarian proponents advocate human ends such as personal and collective happiness. On a utilitarian calculus, shared human interests and communal goods mainly take precedence and are the primary standard by which to gauge conflicts with environmental problems (Merchant, 2005).

The second sustainable ecological ethics approach is known as mid-green or intermediate ethics (Curry, 2006). Here, social theorists extend anthropocentrism and recognize the intrinsic value of other sentient beings. However, when human and non-human values are in conflict, human goals and interests are usually judged superior. There are at least two strands of this approach related specifically to non-human sentient beings. The first focuses on the liberation of animals based on the fact that animals suffer and feel pain just as humans. Two practical outcomes of mid-green ecological ethics are that people should become vegetarians and scientific experimentation using non-human animals should cease. Those who do not agree with these consequences are sometimes accused of speciesism, an unjustifiable and arbitrary prejudice where the interests of one species over another is held for no good reason, something only humans can determine.

The second strand of intermediate sustainable ecological ethics is called biocentrism, which stresses a fundamental and unconditional respect for every organism that makes up the natural world (Norton, 2007). Supported by a universal belief that each organism possesses inherent worth, such an attitude requires that rational beings have a duty to advance the good all organisms naturally try to realize. A difficulty with biocentrism is its rationalistic foundation which makes certain practical considerations untenable when two goods are in conflict. A second criticism is the inability of biocentrism to deal with organisms in a collective way as species and their interdependence within larger ecosystems.

The final ecological sustainable ethics approach embraces a holistic perspective and is known as dark green or eco-centric ethics (Curry, 2006). There are many strands of dark green ethics,

but generally they incorporate ideas linked to the value and integrity of human and non-human species and ecosystems, expectations of conflicts between these entities, and occasionally allowing non-human interests to prevail. One version of eco-centrism is known as the Land Ethic introduced by pioneer American conservationist Aldo Leopold (1887–1948). This view places a premium on granting ultimate concern for the preservation and flourishing of ecosystems. Judging between right and wrong from a Land Ethic perspective often requires an appeal to utilitarian principles where costs and benefits are weighed and the greatest good is advanced for the good of the majority (Banon Gomis, Parra, Hoffman, & McNulty, 2011). A difficulty with this particular stance is its emphasis on community where its members may be interdependent but little or no reciprocity exists between them. Moreover, by giving privilege to ecosystems, the Land Ethic viewpoint sometimes has no easy solution when certain opposing values arise, especially when choosing between doing what is good for the environment at large and one's personal preferences.

A second strand of dark green ethics known as deep ecology was founded in the 1970s by Norwegian philosopher Arne Naess. According to Naess, a new radical ecological paradigm is needed based on a totality of relational experiences of humans and all life forms. Through maturation and identification, people are able to care about entities and those whom they do not know personally. Therefore, humans have the capacity to empathize with and try to alleviate the suffering and pain of other beings the world over. Ultimately for some, this identification can expand to caring about the whole of existence, what Naess calls self-realization, such that we are united with the entire universe beyond the individual self (Wenz, 2001). An enriched human life, one that aspires to achieve deep satisfaction, requires a profound engagement in the world in all its human and non-human diversity. Having described three major ethical approaches of environmental sustainability, the next section will present an admittedly limited discussion of ecological sustainability and sport.

Environmental sustainability and sport

The sheer magnitude of all manner of sport participation throughout the world provides sufficient evidence to take seriously the influence of sport on sustainability and especially in relation to the environment. This concern is also evident in the growing body of literature related to sport and sustainability generally and environmental sustainability in particular (Barker, Barker-Ruchti, Wals, & Tinning, 2014; Brymer, Downey, & Gray, 2009; Camporesi & Knuckles, 2014; Chard, Mallen, & Bradish, 2013; Collins, Flynn, Munday, & Roberts, 2007; Dingle, 2009; Dolles & Soderman, 2010; Horton & Zakus, 2010; Lindsey, 2008; Loland, 2006; Mallen, Adams, Stevens, & Thompson, 2010; Mallen & Chard, 2011, 2012; Mallen, Stevens, & Adams, 2011; Mallen, Stevens, Adams, & McRoberts, 2010; May, 1995; Paquette, Stevens, & Mallen, 2011; Schmidt, 2006; Smith, 2009; Trendafilova, Babiak, & Heinze, 2013).

The deep interest in sport is not surprising given that millions of people play sport and the expansive infrastructure needed to support our competitive and health-conscious zeal is staggering and comes at a sustainable environmental cost. If one considers the diverse natural and human-made physical spaces of sport, the amount of pollution and waste related to sport, and numerous ecological hazards created by sport, it comes as no surprise that the impact of sport on the environment and the environment on sport has gained serious attention. As stated earlier, this interest is fundamentally grounded in ethics that support commonly shared values and practices, now and into the future, and fulfills a vision of how we wish to live.

Today, numerous organizations are specifically devoted to the development and promotion of green sports, another term that describes environmental sustainability. Lindsey (2008) identifies four levels of sustainability related to sports development, namely, the individual, community, organizational, and institutional. Today, many individuals in sports clubs and school and

community-based sports programs support and engage in sustainable practices. Further, most major professional sports leagues now have directors and divisions that oversee environmental issues, and all levels of government in many countries have environmental ministries and departments to ensure that the delivery of sports and recreation programs complies with ecological standards. The following will briefly highlight the efforts of some of these bodies.

The United Nations Environment Programme (UNEP), for example, has a special unit dedicated to sports and the environment. Its mandate is to enhance public awareness of environmental issues related to sport and promote sports facilities and the manufacture of sporting goods that are eco-friendly (UNEP, 2009). The presence of sport and sporting events themselves leaves a substantial ecological footprint (Schmidt, 2006). In many instances, sport disrupts fragile ecosystems and makes use of scarce land; produces more air, water, soil, and noise pollution; consumes non-renewable and natural resources at high levels; adds to the emission of greenhouse gases through inefficient energy use; contributes to the depletion of the ozone layer; and generates enormous waste (UNEP, 2009). UNEP operates many general programs, workshops, and summits around the world to advance safer and healthier environments, and it also works closely with the IOC.

In the 1990s, the IOC formally added to the pillars of sport and culture environmental protection as the third dimension of the Olympic Movement (Paquette et al., 2011). In 1995, the IOC established the Sport and Environment Commission, included an environmental paragraph in the Olympic Charter in 1996, and accepted Agenda 21 in 1999 to encourage sustainable development. The 1998 Nagano Winter Olympics in Japan was the first Games to follow the IOC's new environment policy. Since then, all Olympic Games bids must adhere to a set of environmental criteria if a host city wishes to stage one of the world's most popular mega sporting events (Cantelon & Letters, 2000; IOC, 2008a). The IOC also produced a comprehensive guide and manual to spell out the principles and practical ways to achieve green sports (IOC, 2005).

Since 1994, the IOC has joined with UNEP to enhance awareness and educate people on sport and sustainable development. A number of biennial World Conferences on sport and the environment have been held, the most recent in October–November 2013 in Sochi, Russia. Although ecological sustainable theories, environmental requirements, and practical implementation recommendations are now fully entrenched within the Olympic Movement which no host city can ignore, how well environmental initiatives succeed in any given Olympiad is still contentious (Horton & Zakus, 2010).

For example, the environmental report card for Canada's Vancouver Winter Olympics in 2010, known as the "sustainability" Games, contains mixed scores. On the plus side, the Olympic Village built in the False Creek area achieved an LEED (Leadership in Energy and Environmental Design) Silver achievement rating (Lew, 2010). The village is now part of a sustainable neighborhood. Sustainable transportation was highlighted at Vancouver 2010, as well as carbon emissions and water quality tracking, the relocation of habitats, and low emission generators to reduce greenhouse gas. On the negative side, the most contentious issue was the failed but valiantly fought campaign to save the Eagleridge Bluffs from the expansion of the Sea to Skyway highway, part of the 120-kilometer distance between Vancouver and Whistler (Lenskyj, 2008). Tree and some habitat loss, plus chemically produced snow, were other environmentally harmful results (Shaw, 2008). As mentioned, the environmental report card for the "sustainable" Games in Vancouver contained high and low scores.

In addition to the Olympic Games, the trend to go green has found its way into professional franchise sport in the United States and Canada. In 2008, Major League Baseball (MLB) implemented a league-wide environmental protection strategy in conjunction with the Natural Resources Defense Council (NRDC). Each MLB team makes use of a web-based software tool called Team Greening Program to assess and seek advice on many environmental factors

like energy use, waste management, recycling programs, purchasing, concession operations, and transportation (MLB, 2008). The National Football League (NFL) has an environmental program with a director, and over the past 15 years, several green initiatives have been implemented in staging the Super Bowl. Recent Super Bowls divert about 70 percent of waste material that would end up in landfills; décor, building materials, and office supplies are reused; and the planting of thousands of trees helps offset greenhouse gas emissions (Lennon, 2008).

The National Basketball Association (NBA) also teamed up with the NRDC and launched a green initiative in 2009 during All-Star week in Phoenix, Arizona. Since then, the NBA encourages and assists all teams to become more aware of environmental issues especially in the areas of community-based initiatives, transportation, waste, and arena and event management (Berry, 2009; NBA, 2009). Since 2008, the National Hockey League (NHL) has partnered with the NRDC and the GreenLife organization to implement its green program. The NHL Players Association has over 400 players committed to an initiative called the Carbon Neutral Challenge that tries to offset carbon emissions by buying travel credits with a Montreal-based non-profit organization (Love, 2009).

One professional and amateur sport that continues to have a dramatic impact on the environment and has come under serious scrutiny is golf. The proliferation of golf is a global phenomenon, with expansion in Asia particularly acute and where environmental laws have been and are less stringent. Some of these impacts include clearing of natural vegetation, deforestation, changes in topography, soil erosion, use of chemicals harmful to animals and humans, disrupting or destroying wildlife habitats and ecosystems, genetically engineered grass, and excessive water consumption (Wheeler & Nauright, 2006).

For over a decade, a number of organizations have been formed to make golf eco-friendly. For example, in the United States, the Golf & the Environment Initiative, founded in 1995, is one of the leading advocates dedicated to making sure golf protects and enhances the environment (GEI, 2009). In Canada, the Royal Canadian Golf Association has a green section devoted to research, turf management, and initiatives and programs to promote responsible environmental activities (RCGA, 2009). However, the Global Anti-Golf Movement which began in Japan in 1993 is one of the most vocal opponents of golf course development (Maguire, Jarvie, Mansfield, & Bradley, 2002). Other organizations are critical of certain golf practices, like Beyond Pesticides, which is opposed to the use of pesticides in the golf industry (Barton, 2008). The environmental controversies surrounding golf are extremely complex, yet despite the criticisms, there is an effort to make the sport sustainable for future generations to enjoy.

Another relevant area that influences sport and the environment is the role played by government agencies. In the United States, the Environmental Protection Agency (EPA) is the national body that oversees and regulates the health and safety of the environment. The main sport areas of oversight involve fishing and hunting; however, the EPA partners with many leagues and teams to assist with green initiatives, especially in facilities management (EPA, 2009). In the case of golf development, the EPA Wetlands Division regulates excavations and the reconfiguration of land in and around aquatic areas (Barton, 2008). Natural Resources Canada is the federal body that governs the environment in Canada and, like its U.S. counterpart, it regulates hunting and fishing. However, another federal agency, the Federation of Canadian Municipalities (FCM), has a Green Municipal Fund to assist communities in achieving higher environmental standards in different areas including sports and recreations facilities (FCM, 2009).

Individual states and provinces have government agencies modeled on federal bureaucratic structures that regulate sustainable development, water and air quality, conservation, natural resources, and other environmental areas. These bodies work closely with the private sector and with other public agencies like those that manage state and provincial parks, sports facilities, and sports programs. Similarly, major cities throughout the United States and Canada, like Seattle, Vancouver, San

Francisco, Chicago, and Toronto, have upper-level managers, departments, commissions, and review bodies that oversee environmental initiatives (cf. City of Toronto Environmental Portal, 2009). Municipalities have the most direct control and influence on people's lives and behavioral change in relation to the environment, including those that influence sport participation.

In addition to international bodies, professional leagues and teams, and government agencies that have a stake and interest in the environment, non-profit environmental organizations operate at the local, national, and international levels. An Internet search reveals over 3,800 grassroots ecological organizations around the world, and almost 2,300 of them are found in the United States (Environment and Nature Organizations, 2009). Some of these groups are well known like Greenpeace, the Sierra Club, Friends of the Earth, World Wildlife Fund, and others who focus on global and local areas of environmental sustainability. Part of their efforts and initiatives has an influence on the production, delivery, and implementation of green sports.

Conclusion

As the earlier text has shown, the growing awareness of sustainability issues in so many areas of contemporary life is inescapable, and this includes sport. Responding to environmental and other sustainable challenges will not only require practical and technical changes, but an ethical response as well. Like all those who work in the private and public sectors, sport leaders and managers must comply with environmental and other sustainability laws, rules, and regulations that apply to their respective place of business and/or community. Beyond such conformity, to what extent should these individuals and all sport stakeholders be ethically responsible to the environment, as well as the sustainability of society, culture, and the economy? The following will offer a brief answer to this question.

Just as going green has influenced our everyday lives to some extent, sport today is following the same pattern. More people are aware of ecological and other sustainability problems and are demanding that governments, businesses, and sport address these issues and change their practices. This does not mean that if people recycle at home and use recycle bins at the ballpark they are radical eco-activists. From an ethical perspective, sport organizations, managers, and most industries operate at a basic level of ecological ethics – the light green ethics examined earlier. This means that human interests and happiness are primary values that usually trump contentious environmental and other sustainable needs. This is not a blanket conclusion because there are categories of sport like animal sports that operate, in principle anyway, with due regard for the welfare of animals. There may even be some sports, perhaps nature sports, that are structured and organized from an eco-centric approach whereby the worth of non-human beings and nature are inherently valued, sometimes above human interests. Rather than look to one or the other of these theories to know what sort of responsibility the sport community ought to have toward sustainability, perhaps a different approach is worth considering.

DeJardins (2006) proposes a view known as environmental pragmatism that outlines four areas of consensus in dealing with different ecological sustainable values and responsibilities. First, most people would agree that pollution ought to be reduced and waste be efficiently and safely disposed of because of their significant harm to people and the biosphere. Second, renewable resources should be favored over nonrenewable resources wherever feasible to create greater efficiencies and sustainability for future generations. Third, there should be agreement to preserve sensitive natural settings, habitats, wetlands, and ecosystems to sustain landscapes, plants, and animals in a balanced way with human development in urban and rural areas. Finally, responsibility is needed to encourage biodiversity and healthy and safe food sources to ensure flourishing ecosystems. If consensus in these four areas is reasonable and practical with

regard to environmental sustainability, then the sport community at all organizational levels ought to subscribe to this pragmatic approach, and in many ways, it is already doing so.

On this view, sport leaders and managers need to be creative and forward thinking on sustainability issues when it comes to structuring, organizing, planning, promoting, governing, and delivering sport. Taking on responsibility for the environment in the ways described earlier at all levels of public and private sport, in conjunction with many allied stakeholders, makes for good practice and is critical for the future of sport and the world at large. People in the sport community today want to see that corporations, institutions, governments, and grassroots organizations attend to environmental and other sustainability issues when they participate in sport, buy equipment and apparel, and support sport in myriad ways. They want to know that the sport industry is doing its fair share by assuming greater responsibility for the sustainability of the environment, society, culture, and the economy like many other industries. Engaging in sustainable practices is rooted in ethical behavior, and as such, sport leaders, organizations, and institutions will have to be innovative, balance costs and overall benefits, and demonstrate tangibly to stakeholders that the one world we live in and the betterment of people's lives must be valued and preserved for ourselves and future generations.

Note

1 This chapter is revised and expanded from the following:

DeSensi, J. T., & Rosenberg, D. (2010). Concern for the environment. In *Ethics and morality in sport management* (3rd ed., pp. 257–269). Morgantown, WV: Fitness Information Technology.

Rosenberg, D. (2012). Light green ethics and the Olympic Games movement. In G. Tymowski & C. Weaving (Eds.), *Proceedings of sport and the environment: Philosophical dimensions conference* (pp. 62–70). Antigonish, NS: St. Francis Xavier University.

References

- Banon Gomis, A. J., Parra, M. G., Hoffman, W. M., & McNulty, R. E. (2011). Rethinking the concept of sustainability. *Business and Society Review*, 116, 171–191.
- Barker, D., Barker-Ruchti, N., Wals, A., & Tinning, R. (2014). High performance sport and sustainability: A contradiction in terms? *Reflective Practice*, 15, 1–11.
- Barry, J. (2002). The ethical foundations of a sustainable society. In T. Fitzpatrick & M. Cahill (Eds.), *Environment and welfare: Towards a green social policy* (pp. 21–42). New York, NY: Palgrave Macmillan.
- Barton, J. (2008, May). How green is golf? *Golf Digest*, 59(5), 196.
- Berry, J. (2009, February 9). NBA going green for All-Star events. *The Arizona Republic*. Retrieved from www.azcentral.com/arizonarepublic/local/articles/2009/02/09/20090209allstar-green0209.html
- Brymer, E., Downey, G., & Gray, T. (2009). Extreme sports as a precursor to environmental sustainability. *Journal of Sport & Tourism*, 14, 193–204.
- Camporesi, S., & Knuckles, J. A. (2014). Shifting the burden of proof in doping: Lessons from environmental sustainability applied to high-performance sport. *Reflective Practice*, 15, 106–118.
- Cantelon, H., & Letters, M. (2000). The making of the IOC environmental policy as the third dimension of the Olympic movement. *International Review for the Sociology of Sport*, 35, 294–308.
- Chard, C., Mallen, C., & Bradish, C. (2013). Marketing and environmental sustainability in the sport sector: Developing a research agenda for action. *Journal of Management and Sustainability*, 3, 33–44.
- City of Toronto Environmental Portal. (2009). Retrieved from www.toronto.ca/environment/
- Collins, A., Flynn, A., Munday, M., & Roberts, A. (2007). Assessing the environmental consequences of major sport events: The 2003/04 FA Cup Final. *Urban Studies*, 44, 457–476.
- Curry, P. (2006). *Ecological ethics: An introduction*. Cambridge, UK: Polity Press.
- Davidson, J. (2000). Sustainable development: Business as usual or a new way of living? *Environmental Ethics*, 22, 25–42.

- DeJardins, J. (2006). *An introduction to business ethics* (2nd ed.). New York, NY: McGraw-Hill.
- Dingle, G. (2009). Sustaining the race: A review of literature pertaining to the environmental sustainability of motorsport. *International Journal of Sports Marketing and Sponsorship*, 11, 80–96.
- Dolles, H., & Soderman, S. (2010). Addressing ecology and sustainability in mega-sporting events: The 2006 Football World Cup in Germany. *Journal of Management and Organization*, 16, 603–616.
- Environment and Nature Organizations. (2009). Retrieved from http://dir.yahoo.com/Society_and_Culture/environment_and_nature/organizations
- Environmental Protection Agency (EPA). (2009). *EPA, New York Giants and New York Jets team up to make new Meadowlands stadium a beacon of "green."* Retrieved from <http://yosemite.epa.gov/opa/admpress.nsf/a883dc3da7094f97852572a00065d7d8/eb8bd7874db85f38852575c8005452a8!OpenDocument>
- Federation of Canadian Municipalities (FCM). (2009). Retrieved from www.fcm.ca/english/View.asp?mp=472&cx=666
- Fredericks, S. E. (2012). Justice in sustainability indicators and indexes. *International Journal of Sustainable Development & World Ecology*, 19, 490–499.
- Fredericks, S. E. (2014). *Measuring and evaluating sustainability: Ethics in sustainability indexes*. London: Routledge.
- Golf & the Environment Initiative (GEI). (2009). Retrieved from <http://golfandenvironment.com>
- Horton, P., & Zakus, D. H. (2010). How green will my (Lea) Valley be? Olympic aspirations: Rhetoric or reality. *The International Journals of the History of Sport*, 27, 2677–2709.
- International Olympic Committee (IOC). (2005). *Manual on sport and the environment*. International Olympic Committee: Lausanne.
- International Olympic Committee (IOC). (2008a). *Factsheet: Environment and sustainable development*. International Olympic Committee: Lausanne.
- International Olympic Committee (IOC). (2008b). *IOC technical evaluation criteria*. Retrieved from www.gamesbids.com/english/archives/2008eval.shtml
- Jacobs, M. (1999). Sustainable development as a contested concept. In A. Dobson (Ed.), *Fairness and futurity: Essays on environmental sustainability and social justice* (pp. 21–48). New York and Oxford, UK: Oxford University Press.
- Kates, R. W., Parris, T. M., & Leiserowitz, A. A. (2005). What is sustainable development? Goals, indicators, values and practice. *Environment*, 47(3), 8–21.
- Kohak, E. (2000). *The green-halo: A bird's-eye view of ecological ethics*. Chicago: Open Court.
- Lélé, S. M. (1991). Sustainable development: A critical review. *World Development*, 19, 607–621.
- Lennon, L. (2008, February 2). Arizona, NFL going green for Super Bowl. *WBZTV*. Retrieved from <http://wbztv.com/seenon/Global.Warming.Environment.2.644458.html>
- Lenskyj, H. J. (2008). *Olympic industry resistance: Challenging Olympic power and propaganda*. Albany, NY: State University of New York Press.
- Lew, J. (2010, February 12). Vancouver 2010: The most environmentally friendly Olympics yet? *Good Environment*. Retrieved from www.good.is/post/vancouver-2010-the-most-environmentally-friendly-olympics-yet/
- Lindsey, I. (2008). Conceptualising sustainability in sports development. *Leisure Studies*, 27, 279–294.
- Loland, S. (2006). Olympic sport and the ideal of sustainable development. *Journal of the Philosophy of Sport*, 33, 144–156.
- Love, N. (2009, March 26). NHL players join environmental challenge. *The National Post*. Retrieved from <http://network.nationalpost.com/np/blogs/postedsports/archive/2009/03/26/nhl-players-join-environmental-challenge.aspx>
- Maguire, J., Jarvie, G., Mansfield, L., & Bradley, J. (2002). *Sport world: A sociological perspective*. Champaign, IL: Human Kinetics.
- Major League Baseball (MLB). (2008). *Major League Baseball goes green in collaboration with the Natural Resources Defense Council*. Retrieved from http://chicago.cubs.mlb.com/news/press_releases/press_release.jsp?ymd=20080311&content_id=2418580&vkey=pr_mlb&fext=.jsp&c_id=mlb
- Mallen, C., Adams, L. J., Stevens, J., & Thompson, L. (2010). Environmental sustainability in sport facility management: A Delphi study. *European Sport Management Quarterly*, 10, 367–389.
- Mallen, C., & Chard, C. (2011). A framework for debating the future of environmental sustainability in the sport academy. *Sport Management Review*, 14, 424–433.
- Mallen, C., & Chard, C. (2012). "What could be" in Canadian sport facility environmental sustainability. *Sport Management Review*, 15, 230–243.

- Mallen, C., Stevens, J., & Adams, L. J. (2011). A content analysis of environmental sustainability research in a sport-related journal sample. *Journal of Sport Management*, 25, 240–256.
- Mallen, C., Stevens, J., Adams, L. J., & McRoberts, S. (2010). The assessment of the environmental performance of an international multi-sport event. *European Sport Management Quarterly*, 10, 97–122.
- May, V. (1995). Environmental implications of the 1992 Winter Olympic Games. *Tourism Management*, 16, 269–275.
- Merchant, C. (2005). *Radical ecology: The search for a livable world* (2nd ed.). New York, NY: Routledge.
- NBA tips off inaugural green week for environmental awareness. (2009, April 2). *Sports Business Daily*. Retrieved from www.sportsbusinessdaily.com/article/129062
- Norton, B. (2007). Ethics and sustainable development: An adaptive approach to environmental choice. In G. Atkinson, S. Dietz, & E. Neumayer (Eds.), *Handbook of sustainable development* (pp. 27–44). Cheltenham, UK and Northampton, MA: Edward Elgar.
- O'Hara, S. U. (1998). Economics, ethics and sustainability: Redefining connections. *International Journal of Social Economics*, 25, 43–62.
- Paquette, J., Stevens, J., & Mallen, C. (2011). The IOC: An interpretation of environmental sustainability, 1994–2008. *Sport in Society*, 14, 355–369.
- Romero, S., & Broder, J. M. (2012, June 23). Progress on the sidelines as Rio conference ends. *The New York Times*. Retrieved from www.nytimes.com/2012/06/24/world/americas/rio20-conference-ends-with-some-progress-on-the-sidelines.html?_r=0
- Royal Canadian Golf Association (RCGA). (2009). *Golf and the environment*. Retrieved from www.rcga.org/innerpage.aspx?x=XrdhG%2fmCc93KaNBSQXQlxSoA8KFEoFTRkETNx2UWD3FGXW1EMuxExVvbF1PUkaqaDY4YN0Tt3E%3d
- Schmidt, C. W. (2006). Putting the earth in play: Environmental awareness in sports. *Environmental Health Perspectives*, 114, A286–A295.
- Shah, A. (2002, September 7). World summit on sustainable development. *Global Issues*. Retrieved from www.globalissues.org/article/366/world-summit-on-sustainable-development
- Shaw, C. A. (2008). *Five ring circus: Myths and realities of the Olympic Games*. Gabriola Island, BC: New Society.
- Shearman, R. (1990). The meaning and ethics of sustainability. *Environmental Management*, 14, 1–8.
- Smith, A. (2009). Theorising the relationship between major sport events and social sustainability. *Journal of Sport & Tourism*, 14, 109–120.
- Trendafilova, S., Babiak, K., & Heinze, K. (2013). Corporate social responsibility and environmental sustainability: Why professional sport is greening the playing field. *Sport Management Review*, 16, 298–313.
- United Nations (UN). (2000a). *United Nations millennium declaration*. Retrieved from www.un.org/millennium/declaration/ares552e.htm
- United Nations (UN). (2000b). *United Nations millennium development goals*. Retrieved from www.unmillenniumproject.org/goals/
- United Nations (UN). (2002). *Report of the world summit on sustainable development*. Retrieved from www.unmillenniumproject.org/documents/131302_wssd_report_reissued.pdf
- United Nations (UN). (2012). *Rio +20 United Nations conference on sustainable development*. Retrieved from www.uncsd2012.org/about.html
- United Nations (UN). (2015a). *Millennium development goals summary report*. Retrieved from www.un.org/millenniumgoals/2015_MDG_Report/pdf/MDG%202015%20Summary%20web_english.pdf
- United Nations (UN). (2015b). *Transforming our world: The 2030 agenda for sustainable development*. Retrieved from www.un.org/ga/search/view_doc.asp?symbol=A/69/L.85&Lang=E
- United Nations Conference on Environment and Development (UNCED). (1992). *The earth summit*. Retrieved from www.un.org/geninfo/bp/enviro.html
- United Nations Environment Programme (UNEP). (2009). *Sport and the environment*. Retrieved from www.unep.org/sport_env/
- Wenz, P. S. (2001). *Environmental ethics today*. New York, NY: Oxford University Press.
- Wheeler, K., & Nauright, J. (2006). A global perspective on the environmental impact on golf. *Sport in Society*, 9, 427–443.
- World Commission on Environment and Development. (1987). *Our common future*. Oxford, UK: Oxford University Press.

5

CLIMATE CHANGE AND THE FUTURE OF INTERNATIONAL EVENTS

A case of the Olympic and Paralympic Games

Lisa M. DeChano-Cook and Fred M. Shelley

Outdoor sports can have a considerable impact on the natural environment. For example, soccer fields experience compacting of the soil. Golf courses use large amounts of water in order to keep the greens in good shape, and this may lower the water table. Motor vehicle racetracks can affect the microclimates of the areas in which they are located because of the large amount of asphalt used to pave them.

Although outdoor sports affect the environment, the environment also affects outdoor sports. Global climate change has resulted in increased surface temperatures, and venues that have been used traditionally for winter sports competitions can be used no longer because of warmer weather and lack of snow and ice. Air pollution affects distance runners and other athletes. Rising sea levels can affect water sports and could render coastal cities such as New Orleans, Amsterdam, and Miami unable to host large-scale competitions.

The purpose of this chapter is to investigate the question of how the environment affects sports. We look specifically at the future of the Olympic and Paralympic Games and other major international outdoor sporting events, focusing especially on the potential impacts of global climate change on sporting competition.

Sports–environment interactions

Researchers and sports enthusiasts recognize that sports and the environment are linked inextricably. Sports can influence the environment in several ways. For example, the construction of a new golf course or a new sports facility can affect nearby wetland ecosystems highly because the water table is lowered. This disrupts and/or severely alters these ecosystems (DeChano & Hruska, 2006). Runoff contaminated with fungicides and pesticides flows into nearby streams, rivers, and lakes, affecting breeding grounds for fish, birds, and insects. As sports and their associated facilities continue to use larger and larger tracts of land, natural habitats for plant and animal species are lost.

However, some designers of golf courses and other sporting facilities have become aware of these environmental impacts and have implemented strategies and designs to help these species. For example, aquascaping provides alternative habitats for alligators and aquatic bird species

(Beeman, 1995; DeChano & Hruska, 2006). Some courses have become Audubon-certified wildlife sanctuaries. While playing the links, golfers playing on these courses may observe turkeys, armadillos, turtles, and even the endangered Florida panther (Audubon International, 2016). American Airlines Arena in Miami, which is home to the National Basketball Association's Miami Heat, has been recognized by the United States Green Building Council (USGBC) for practices associated with environmental sustainability, including reliance on renewable energy, extensive recycling, and banning the use of chemicals that could pollute local water supplies in maintaining the building. As a result, the arena became the first sports facility in the United States to achieve Leadership in Environmental and Energy Design (LEED) Gold certification by the USGBC (NBA, 2015).

Despite these successes, and despite increased awareness of the relationships between facility design and efforts to mitigate environmental impacts of sports, the environment has considerable impact on sports, usually at a much larger scale. For instance, athletic performance suffers when air quality is poor. Lippi, Guidi, and Maffulli (2008) state that poor air quality can greatly increase ventilator rates and nasal and oral breathing, which can decrease athletic performance. McKenzie and Boulet (2008) discuss how Olympic athletes with asthma have an even more challenging set of circumstances than those who do not suffer from asthma. This means that when air quality is poor, all athletes will be affected, but those with asthma will be affected sooner and to a greater degree.

The impact of air pollution on international competition in distance running received international attention before the 2008 Olympic and Paralympic Games in Beijing, China. Beijing had been recognized prior to the Games as one of the most polluted cities in the world. Atmospheric scientists measuring pollution levels concluded that levels of particulate pollution and ozone in the air in Beijing during average summer days were considerably greater than what are considered healthful (Streets et al., 2007). As a result, several world-class distance runners declined to participate in the 2008 Olympic competition.

Lightning strikes are also a threat to athletes. Essentially, athletes in any outdoor sport need to be aware of this hazard. Lightning can cause a range of effects such as electrical shock, cardiac or respiratory arrest requiring immediate medical attention, more long-term effects such as sleep disorders and nervous systems dysfunction, or lethal injuries (Cooper, 1980; Cooper & Marshburn, 2005; DeFranco, Baker, DaSilva, Piasecki, & Bach, 2008; Hendler, 2005; Lopez & Holle, 1986; Maghsoudi, Adyani, & Ahmadian, 2007; Watson, Lopez, & Holle, 1994).

Competitors who participate in athletic contests that take place during the summer months in mountainous environments such as the Tour de France and the Ultra Trail du Mont Blanc are at risk for lightning strikes because of the timing of these incidents, many of which occur during summer afternoons (Brocherie, Girard, & Millett, 2015; Cooper & Marshburn, 2005). In a National Oceanic and Atmospheric Administration (NOAA) study of lightning fatalities in the United States between 2006 and 2013, Jensenius (n.d.) reported that the frequency of fatalities due to lightning increased during the summer months. He also pointed out that 37 percent of lightning fatalities occurred with water-related activities, with fishing accounting for nearly 50 percent of these fatalities. Sports-related lightning deaths happened most often with soccer (41 percent) and golf (28 percent). Recognizing the danger of lightning, the U.S. Professional Golf Association rules specify that play is to be suspended immediately if lightning is observed or expected.

Climate change and sports

Lightning, pollution, and other environmental issues affect individual competitions and their participants. However, global climate change is perhaps the most challenging environmental

issue humans have faced to date. Its actual and potential impacts on sports are considerable, in part because global climate change is having major impacts on environmental conditions under which sports competitions are taking place. As defined by the U.S. Environmental Protection Agency (EPA) on its website (EPA, 2016b):

Climate change refers to any significant change in the measures of climate lasting for an extended period of time. In other words, climate change includes major changes in temperature, precipitation, or wind patterns, among other effects, that occur over several decades or longer.

Over the past 100 years, Earth's average surface temperature has risen by 1.5 °F (1 °C). In the next 100 years, climate scientists have predicted that Earth's average surface temperature will continue to increase. The most conservative estimates suggest that by 2100, Earth's surface temperature will rise by another 0.5 °F (0.3 °C). Some models have predicted that it might increase by as much as 8.6 °F (6 °C). Even small changes may cause major and potentially dangerous shifts in weather and climate. Temperature changes can lead to more flooding and more intense rainfall, as well as more drought and severe heat waves. More intense rainfall may occur because global warming could result in stronger and more intense hurricanes and other severe storms. Rising temperatures are melting glaciers and ice caps, making sea levels rise, and making oceans more acidic (EPA, 2016b).

Most atmospheric scientists recognize that climate change is largely due to human activities. As indicated by the National Oceanic and Atmospheric Administration (2016), the amount of carbon dioxide as well as other greenhouse gases (GHGs) into the atmosphere has increased dramatically since 1960, largely because of pollution generated by motor vehicles and industrial production. The amount of atmospheric carbon dioxide recorded at Mauna Loa Observatory, Hawaii, was under 320 parts per million in 1960, but increased to nearly 405 parts per million in 2015. Larger amounts of GHGs in the atmosphere reduce the loss of heat to space, intensifying the pace of global warming. Essentially, GHGs are creating a blanket over Earth, causing it to warm (EPA, 2016a).

The effects of global climate change on society are many. In the United States, southern and Western areas, where populations are growing rapidly, may experience more coastal storms and droughts, as well as more severe air pollution and heat waves. Places such as California and the desert Southwest have already been experiencing long-term drought, and models have predicted that the climate of this region will become warmer and drier in the years ahead. Water shortages may increase, especially in and near rapidly growing cities that experience dry climates such as Phoenix and Las Vegas. Another impact of warmer and drier weather in the Western United States is the increased risk of wildfires, which have been occurring with greater frequency and magnitude in the Mountain West (EPA, 2016d).

Globally, climate change will continue to affect agriculture and food supplies as well as water supplies and quality and human health. Rising temperatures increase drought and heat stress, which, in turn, reduces crop yields and livestock productivity. Areas of drought will become more widespread, whereas the amount of water available from previously reliable sources may decline. Moreover, demand for water will increase as global populations continue to rise, further stressing water supplies in drier areas of the world.

The impacts of climate change on water around the world are not limited to its effects on water supply. Water quality will also be affected because warmer water can cause algal blooms and breed bacterial growth. People will also have to wrestle with more frequent and severe heat stress, including breathing problems and respiratory diseases. As was the case with the 2008

Olympics and Paralympics in Beijing, respiratory stress associated with global warming is often associated with higher levels of air pollution. Areas that may receive more precipitation and flooding could lead to increases in mosquito-borne diseases such as malaria (EPA, 2016c) or the more recent Zika virus (World Health Organization, 2016).

The effects of global climate change on sports are not inconsequential either. Heat wave incidents (i.e., extended periods of extreme high temperature) have increased, which can significantly worsen human health (D'Ippoliti et al., 2010; Zacharias, Koppe, & Mücke, 2014). In recent years, extreme heat plagued the 2014 World Cup in Brazil and the 2016 Australian Open tennis tournament, and it is very likely to be a major factor in the 2022 World Cup in Qatar. In Brazil, excessive heat prompted one of Brasilia's labor court judges, Rogerio Neiva Pinheiro, to require the Fédération Internationale de Football Association (FIFA) to allow official water breaks if temperatures rose above 90 °F (32 °C). If FIFA did not comply, it would have been fined US\$90,000 (Kroh, 2014).

Prolonged exposure to very high temperatures cannot only affect athletic performance, but can even be life threatening. Extreme temperatures require the body to work harder to remain cool because sweat does not evaporate easily, and once body temperature reaches a certain point, proteins start to break down and become damaged, which could lead to death. In light of these risks, tennis matches were suspended during the 2014 Australian Open after temperatures exceeded 109 °F (43 °C). In order to combat the extreme heat that will no doubt occur in Qatar, FIFA officials have moved the World Cup from late spring to winter (Leberfinger, 2015). Although the change will lessen the impacts of extreme heat, Qatar will not be "cool," as high temperatures can reach 84 °F (28.9 °C) even in the winter – not much cooler than the hottest temperatures experienced during matches in Brazil in 2014 (Schube, 2015).

Athletic performance is not the only impact that our changing climate has on sports. The impact on hockey has the National Hockey League concerned. Traditionally, many young Canadians learned to play hockey while skating on frozen ponds during the winter months. However, as temperatures rise globally, ponds once suitable for hockey no longer have enough ice to support skating. Some do not freeze at all, and those that do freeze maintain ice thick enough for play for much shorter periods of time each winter. This means that young people have less access and opportunity to learn and play hockey outdoors. This may translate into fewer players and even fewer fans of the sport (Waldron, 2013). Moreover, young players learning the sport will be forced to do so in indoor venues, which are much more expensive and harder to access than traditional outdoor play. Thus, it will become much more difficult for talented players growing up in rural areas and/or in poor families to learn to play the sport at a professional level. This may turn hockey into a sport largely inaccessible by the economically disadvantaged, as is the case today with competitive figure skating, swimming, and tennis.

Other outdoor sports such as surfing, skiing, snowboarding, and snowshoeing are also feeling effects from warming temperatures. The surfing industry is under attack due to rising temperatures and sea levels as the sport is reliant on the health of oceans and coasts (see Chapter 24 for more information). Some of the world's premier surfing locations could be lost due to ocean acidification, a byproduct of burning fossil fuels. These warmer, more acidic waters could destroy coral reefs as the calcium carbonate they need to survive will not be available. The destruction of coral reefs has serious implications for surfing, as these natural habitats produce some spectacular surf breaks. Sea level rise also influences where and how a wave breaks. Waves that break over cobblestones instead of sand could change significantly in contour, making for dangerous surfing conditions (Kroh, 2013).

Ski resorts are experiencing a lack of natural snow and indirectly, then, a loss in tourism revenue (Richardson, 2015; Yang & Wan, 2010). Snow model simulations indicate that by 2025,

average ski conditions could be vastly different than what is currently being experienced (Richardson, 2015). The warmer winters and lack of snow even forced the Iditarod to move its starting point 225 miles north from its traditional starting point in Anchorage, Alaska, in 2015. This marks only the second time in the race's history that the course had to be changed; the first time was in 2003 for the same reason (Climatenexus, 2015).

Skiing may be experiencing similar results. More and more ski areas have to rely on artificial snow. Bürki (2000) inquired about how skiing activity would be affected at five Swiss ski areas if less natural snow was available at that location over the next five winters. Whereas 58 percent indicated that they would continue skiing at the same frequency, 32 percent of respondents reported that they would ski less often and 4 percent would quit skiing altogether (Bürki, 2000; Bürki, Elsasser, & Abegg, 2003). Research by König (1998) at three Australian ski areas reported different but related results. Using the same scenario as Bürki's, 25 percent of König's respondents indicated that they would continue skiing at the same frequency. Just over one-third of respondents would most likely ski less often but still in Australia, with 6 percent not skiing any longer. Interestingly, 38 percent of respondents indicated that they would find alternative destinations outside of Australia in order to continue skiing. If this occurs, the Australian ski industry would be subject to substantial financial losses as a tangential indirect effect.

Even international sporting venues are not immune to challenges associated with a lack of snow or keeping what snow they have from melting. At the 2014 Winter Olympics in Sochi, Russia, ski event organizers were forced to cancel some training runs and shift others to nighttime hours because of warm weather and melting snow (Sheinin, 2014). Sochi boasts a subtropical climate, but Olympic officials were convinced that the "mountain cluster," 40 miles from the city's center, would not have issues with warmer temperatures during the winter. However, during the daytime, temperatures at the Games soared to over 59 °F (15 °C) above normal daytime high temperatures (Miller, 2014). Artificial snow had to be brought in for skiing competitions in Sochi, as had been the case for skiing events in the 2010 Winter Olympics in Vancouver.

Given the recent change in global climate, it appears that many cities that have hosted Olympic and Paralympic Games in the past may be unsuitable as host cities in the future. This idea is examined more closely in the following section.

Climate change and future Olympic and Paralympic cities

The Intergovernmental Panel on Climate Change's (IPCC) *Fifth Assessment Report* (2013) predicted that global temperatures could rise between 1.8 °F and 5.4 °F (1 and 4 °C) by 2100. The IPCC and the National Climate Assessment (NCA, 2015) projected that sea levels could rise 1 to 4 feet (30 to 120 cm) by 2100. Coastal cities will experience the greatest impact due to sea level rises.

In the years ahead, these impacts of climate change will affect not only individual sports, but the selection of venues for the Olympic and Paralympic Games and other major sporting events themselves. Given increased global surface temperatures, this might be a particular issue in locating the Winter Games. Unusually warm temperatures that affected the Sochi and Vancouver Games suggest that it is unlikely that these venues could be chosen again because of the likelihood of insufficient snow and ice for skiing, snowboarding, bobsledding, and other outdoor events. Former Summer Olympic cities such as Sydney and Los Angeles are at risk from increasing sea levels. Other coastal cities such as Amsterdam, once an option based on temperature, will be eliminated based on sea level rise because Amsterdam is likely to be underwater. Based on NASA's heat forecast for July 2100, it is very clear that areas of northern Africa and the Middle East will be too warm to host a Summer Olympic and Paralympic Games as these areas will experience temperatures in excess of 104 to 113 °F (40 to 45 °C) (NASA, 2015).

Putting this issue in a larger historical perspective, Scott, Steiger, Rutty, and Johnson (2014) sought to determine whether past Winter Olympic sites would be suitable to host the Games by 2050. Nineteen cities have hosted the Winter Games between 1924 and 2014: Chamonix, France (1924); St. Moritz, Switzerland (1928, 1948); Lake Placid, United States (1932, 1980); Garmisch-Partenkirchen, Germany (1936); Oslo, Norway (1952); Cortina d'Ampezzo, Italy (1956); Squaw Valley, United States (1960); Innsbruck, Austria (1964, 1976); Grenoble, France (1968); Sapporo, Japan (1972); Sarajevo, Yugoslavia (1984); Calgary, Canada (1988); Albertville, France (1992); Lillehammer, Norway (1994); Nagano, Japan (1998); Salt Lake City, United States (2002); Torino, Italy (2006); Vancouver, Canada (2010); and Sochi, Russia (2014). To estimate each city's suitability to host the Games in 2050, Scott et al. used two main climate indicators: (1) the likelihood that the daily minimum temperature would remain below freezing at the main competition elevation and (2) the probability at least 11.8 inches (30 cm) of snowpack, through natural and artificial means, could be maintained at the higher elevations of alpine events. They also used two emissions scenarios that indicate a conservative and liberal prediction of the temperature change in 2050 and 2080 above the 1981–2010 average February temperature. These scenarios include global temperature rises of 1.8 °F and 5.4 °F (1 and 4 °C), which are the low and high estimates of temperature increases specified in the IPCC's *Fifth Assessment Report*.

The results of the low-emissions examination found that 11 of the 19 cities would still be able to host the Olympic and Paralympic Games in 2050 and 2080, whereas 4 would be at high risk and 4 would be no longer viable options. If the high-emissions scenario played out, 10 cities would be climatically viable to host the Games in 2050, whereas 3 cities would be a high risk, and 6 cities would be too warm to host them. When looking at the 2080s, Scott et al. noted that 10 cities would be able to host the Olympics and Paralympic under the low-emissions scenario but only 6 cities would be viable options under the high-emissions scenario. All of these results indicate that the number of cities that have hosted the Winter Olympics in the past will dwindle in the future simply based on temperature increases alone.

Are there other cities that have not previously hosted the Winter Olympic and Paralympic Games feasible alternatives in the future, given that many of the cities that have hosted the Games in the past are no longer suitable venues? Following the analysis undertaken by Scott et al. (2015), the likelihood of continued global warming implies that suitable venues will be limited to places in higher elevations and/or higher latitudes than are many of the venues that have been used in the past. Some places such as Moscow and Saskatoon experience winter temperatures that are cold and snowy enough for winter sports, but such places are unsuitable because of their flat terrain. Some cities located in cold, mountainous environments may be suitable from an environmental standpoint, such as places in Alaska, western Canada, northern Scandinavia, and Russia. Examples might include Petropavlovsk-Kamchatsky and Magadan in Russian Siberia, Alta in Norway, and Whitehorse in Canada. However, most of these cities and other potential sites that are suitable environmentally are remote, small, and/or isolated and do not have the infrastructure needed to host the thousands of athletes, coaches, journalists, and spectators who attend each Olympic competition.

Although Scott and his colleagues provide a good study on what the future might bring for climate change and the Winter Games, they only investigated past Winter Olympic and Paralympic host cities and rising temperatures. This examination would need to be expanded to look at host cities in 2100 because sea level changes are typically only noticeable on a timescale of centuries (Meehl et al., 2007; Schaeffer, Hare, Rahmstorf, & Vermeer, 2012). What would the potential Olympic host city list look like when rising temperatures and sea levels are taken into consideration? By 2100, which cities could host Summer Games? Which could host Winter

Games? Could cities that once hosted the Winter Games now host a Summer Games? These are some of the questions examined in the next section.

Examining former sites

We examined the likelihood that former Olympic host cities could host the Games in 2100 based on the IPCC's predictions of temperature and sea level increases noted earlier. We determined the average winter and summer temperatures, as well as the mean sea level, for each city. February and August temperatures were used for winter and summer, respectively, in the Northern Hemisphere, and for summer and winter, respectively, in the Southern Hemisphere. We then calculated the future February and August temperatures using a 1.8 to 5.4 °F (1 to 4 °C) rise, predicting the average temperatures in 2100. We also calculated the elevation of each city based on a 1 to 3.9 ft (0.3 to 1.2 m) sea level rise.

A 44.6 °F (7 °C) maximum summer temperature (the warmest average summer temperature of any Winter Games) was used as the unsuitable threshold, and a 32 °F (0 °C) threshold was used as the at-risk threshold. With a conservative 1.8 °F (1 °C) temperature rise, we concluded that three former Winter Olympic host cities would be too warm to host the Winter Games in the future, eight cities would be considered at risk, and the remainder of the cities would be considered suitable (see Table 5.1). We found that 4 cities could not host the Olympic Games in

Table 5.1 The suitability of past Olympic host cities to host events in 2100 based on 1.8 to 1.4 °F temperature increases and 1–3.9 ft sea level rise

City	Country	Winter		Summer		1 ft rise	3.9 ft rise
		T rise (1.8°F)	T rise (5.4°F)	T rise (1.8°F)	T rise (5.4°F)		
Amsterdam	Netherlands	AR	U	S	S	U	U
Albertville	France	AR	AR	S	S	S	S
Antwerp	Belgium	AR	U	S	S	U	U
Athens	Greece	U	U	U	U	S	S
Atlanta	USA	U	U	S	U	S	S
Barcelona	Spain	U	U	S	U	AR	AR
Beijing	China	S	AR	S	U	S	S
Berlin	Germany	AR	AR	S	S	S	S
Calgary	Canada	S	S	S	S	S	S
Chamonix	France	AR	AR	S	S	S	S
Cortina d'Ampezzo	Italy	S	AR	S	S	S	S
Garmisch-Partenkirchen	Germany	S	AR	S	S	S	S
Grenoble	France	AR	U	S	S	S	S
Helsinki	Finland	S	S	S	S	U	U
Innsbruck	Austria	AR	AR	S	S	S	S
Lake Placid	USA	S	S	S	S	S	S
Lillehammer	Norway	S	S	S	S	S	S
London	United Kingdom	U	U	S	S	S	S
Los Angeles	USA	U	U	S	U	U	U
Melbourne	Australia	U	U	S	S	S	S
Mexico City	Mexico	U	U	S	S	S	S
Montreal	Canada	S	S	S	S	S	S

Climate change and international events

City	Country	Winter		Summer			
		T rise (1.8°F)	T rise (5.4°F)	T rise (1.8°F)	T rise (5.4°F)	1 ft rise	3.9 ft rise
Munich	Germany	AR	AR	S	S	S	S
Nagano	Japan	AR	AR	S	U	S	S
Oslo	Norway	S	AR	S	S	AR	AR
Paris	France	U	U	S	S	S	S
Rio de Janeiro	Brazil	U	U	U	U	U	U
Salt Lake City	USA	AR	AR	S	U	S	S
Sapporo	Japan	S	S	S	S	AR	AR
Sarajevo	Yugoslavia	AR	AR	S	S	S	S
Seoul	South Korea	S	AR	S	U	S	S
Sochi	Russia	U	U	S	S	S	S
Squaw Valley	USA	U	U	U	U	S	S
St. Louis	USA	AR	AR	S	U	S	S
St. Moritz	Switzerland	S	S	U	S	S	S
Stockholm	Sweden	S	AR	S	S	S	S
Sydney	Australia	U	U	S	S	S	S
Tokyo	Japan	U	U	U	U	S	S
Torino (Turin)	Italy	U	U	S	S	AR	AR
Vancouver	Canada	AR	AR	S	S	AR	AR

Note: S-suitable; AR-at risk; U-unsuitable

2100 when using the more liberal 5.4 °F temperature increase, 10 cities would be considered at risk, and only 5 cities may be suitable. One city, Sapporo, is right on the cusp of the minimum threshold of 32 °F. Interestingly, five former Summer Olympic summer host cities would be suitable for the Winter Games in 2100 (i.e., Beijing, Helsinki, Montreal, Seoul, Stockholm) if the temperature only increased by 5.4 °F. However, three of these cities (i.e., Beijing, Seoul, Stockholm) have an average February temperature approaching 32 °F. If the temperature change is closer to 5.4 °F, Helsinki and Montreal are the only cities that may be suitable to host the Winter Games in 2100. Other past Summer Olympics cities such as Amsterdam, Antwerp, Berlin, Munich, and St. Louis may be possibilities based on their average February temperatures but may not be suitable for other reasons, such as a lack of mountainous topography.

We used a similar methodology to examine Summer Games venues. Cities were considered suitable if their average summer temperatures fell between 59 °F (15 °C) (the coolest average August temperature of a former summer Olympic host city) and 82.4 °F (28 °C). Several past Summer Olympic cities already experience summer temperatures greater than 82.4 °F. For a 1.8 °F rise in temperature, we found that Athens, Rio de Janeiro, and Tokyo would be too warm for a host city. Atlanta, Barcelona, Beijing, Los Angeles, Seoul, and St. Louis would be approaching the 82.4 °F threshold for warmth. When we examined former Winter Olympics host cities as potential Summer Olympics venues, we found that Squaw Valley would be too warm for a host city, and Nagano and Salt Lake City would be approaching that threshold. St. Moritz would not be warm enough in August, as it would be cooler than the 59 °F minimum threshold established.

When a greater temperature increase scenario (5.4 °F) is examined, more past Summer Olympic venues emerged as unsuitable for the Summer Olympic and Paralympic Games by 2100. Melbourne would be a possibility, but would be approaching the upper temperature limit. Winter Olympic cities such as Nagano, Salt Lake City, and Squaw Valley would be too warm,

with Sapporo, Sochi, and Torino approaching this limit. The remainder of these cities lies within the warmest and coolest limits established, indicating that these former Winter Olympic host cities could potentially become former Summer Olympics host cities. To date, no city has hosted both the Winter and Summer Olympics, but this is not out of the realm of possibility, given the currently predicted climate change scenarios.

Sea level rise is also an issue for some cities; however, for the Winter Games, it is not as imperative as the only city that would be highly affected would be Vancouver, whose mean sea level is 6.6 ft (2 m) (see Table 5.1). However, Torino and Sapporo are not at very great elevations above sea level. A few more Summer Olympic venues could be underwater, including Amsterdam, Antwerp, Helsinki, Los Angeles, and Rio de Janeiro, as they all currently lie at or near sea level. Barcelona may also have issues with sea level rise, as these cities lies only about 39 ft (12 m) above sea level.

Examining potential sites

One question that arises while looking at past Olympic host cities is: What other cities may be able to host the Winter and/or Summer Olympics and Paralympics based on the estimated temperature and sea level increases? To answer this question, we examined a number of cities that have hosted other global sports competitions such as World Cup Skiing and World Cup Soccer. We also added cities that may be viable options but have not yet been venues for global sporting events. We used the same temperature and sea level thresholds as was used to determine which cities could potentially be Olympic and Paralympic host cities in 2100.

Of these 68 potential summer host cities, 14 were eliminated as they will be either at risk or unsuitable due to sea level rise by 2100. These cities included Arica, Chile; Buenos Aires, Argentina; Cape Town, South Africa; Durban, South Africa; Gijon, Spain; Gothenburg, Sweden; Hamburg, Germany; Juneau, United States; Malaga, Spain; Naples, Italy; St. Petersburg, Russia; Valencia, Spain; and Vigo, Spain. We also concluded that seven cities would not be suitable for the Summer Olympics because of expected temperature increases. Cities that would be too warm for the Summer Olympics based on a projected increase of 5.4 °F include Bologna, Italy; Florence, Italy; Guadalajara, Mexico; Madrid, Spain; Mendoza, Argentina; Rosario, Argentina; and Sao Paulo, Brazil. The remaining 43 cities that could be potential summer host cities are listed in Table 5.2.

Table 5.2 Suitable summer host Olympic and Paralympic cities in 2100 based on increases in temperature and sea level

<i>City</i>	<i>Country</i>	<i>City</i>	<i>Country</i>
Anchorage	USA	Madonna di Campiglio	Italy
Basel	Switzerland	Manchester	England
Belo Horizonte	Brazil	Mar del Plata	Argentina
Berchtesgaden	Germany	Maribor	Slovenia
Bern	Switzerland	Mexico City	Mexico
Birmingham	England	Montevideo	Uruguay
Bloemfontein	South Africa	Murau-Kreischberg	Austria
Bordeaux	France	Oviedo	Spain
Brasilia	Brazil	Paris	France
Curitiba	Brazil	Port Elizabeth	South Africa
Dortmund	Germany	Pretoria	South Africa

<i>City</i>	<i>Country</i>	<i>City</i>	<i>Country</i>
Dusseldorf	Germany	Santiago	Chile
Fairbanks	USA	Strasbourg	France
Frankfurt	Germany	Stuttgart	Germany
Gelsenkirchen	Germany	Toulouse	France
Geneva	Switzerland	Ulaanbaatar	Mongolia
Hannover	Germany	Valladolid	Spain
Innichen/San Candido	Italy	Valle Nevado	Chile
Johannesburg	South Africa	Verona	Italy
Kaprun	Austria	Whistler, BC	Canada
Liverpool	England	Zurich	Switzerland
Lyon	France		

Thirty-three cities emerged as potential winter host cities; however, five cities were eliminated due to being nearly or close to sea level (Gothenburg, Sweden; Hamburg, Germany; Juneau, United States; Malmo, Sweden; St. Petersburg, Russia). In terms of temperature rise, six cities would be suitable host cities even with the highest estimated temperature increases (Anchorage, United States; Arosa, Switzerland; Fairbanks, United States; Madonna di Campiglio, Italy, Ulaanbaatar, Mongolia; Whitehorse, Canada).

Some of the cities listed earlier may be suitable cities based on climate change but are not suitable when issues such as infrastructure, transportation, ease of access, economics, and politics are brought into the host city equation. This is particularly true for potential Winter Olympics venues. Many of these cities have low populations, in particular Whitehorse with a population of only about 25,000. Others such as Reykjavik and Ulaanbaatar have larger populations, but they are located in sparsely populated countries whose infrastructure is insufficient to host the Games.

Cities and countries such as these probably do not have the resources to construct the needed sports venues. Even if these venues could be built, they would be useless after the Games were over. Nor do they have the hotel space, restaurants, and other amenities needed to accommodate the tens of thousands of athletes, coaches, journalists, and spectators who attend the Games. Moreover, many of these cities have remote locations with poor transportation. For example, Ulaanbaatar's airport is the only one in Mongolia that offers international flights, and it is connected directly by air to cities in only eight other countries. Moreover, the road distance from Ulaanbaatar to the nearest world city, Beijing, is more than 1,150 kilometers, and many roads in Mongolia remain unpaved and poorly marked.

Economics and politics could also play a role. Less developed countries could not afford to build and maintain Olympic venues, and even somewhat developed countries such as Mongolia, with a per-capita gross domestic product of about \$11,000, would have great difficulty in making these investments. Whereas Mongolia is a democracy, many less developed countries are fragile states. Successful or attempted coups d'etat such as those experienced in recent years in Egypt and Turkey could also imperil the Games.

Conclusion

Global environmental change, including global warming and sea level rise, are beginning to have significant impacts on sports. Rising temperatures and increased pollution are already affecting individual sporting competitions and individual athletes. Even more significantly, these

environmental changes are affecting possible venues for the Olympic and Paralympic Games, the World Cup, and other global athletic events. This has already been evident in the two most recent Winter Olympics in Vancouver and Sochi, where warm winter temperatures significantly impeded outdoor events.

Many of the cities that once hosted Summer and Winter Olympic Games are no longer suitable venues for future competitions because of warmer winters, hotter summers, and/or coastal locations. As a result, the number of potential venues for future Olympic Games continues to decrease. This is a particular problem for the Winter Olympics given that winter temperatures in many places are now too high to ensure sufficient snow cover for outdoor sports such as skiing and snowboarding. Although more northerly locations may be suitable from an environmental standpoint, they lack sufficient population and infrastructure to host the Games. In the future, the IOC, FIFA, and other international organizations associated with sports will need to pay careful attention to environmental change as they select sites and manage competitions.

References

- Audubon International. (2016). *About the Audubon Cooperative Sanctuary Program for Golf*. Retrieved from www.auduboninternational.org/acspgolf
- Beeman, S. (1995). Aquascaping: The natural approach to water features. *USGA Green Section Record*, 33, 6–8.
- Brocherie, F., Girard, O., & Millet, G. P. (2015). Emerging environmental and weather challenges in outdoor sports. *Climate*, 3, 492–521.
- Bürki, R. (2000). Klimaänderung und anpassungsprozesse im wintertourismus. *Ostschweizerische Geographische Gesellschaft*. Retrieved from www.breiling.org/snow/dissburki.pdf
- Bürki, R., Elsasser, H., & Abegg, B. (2003, December). *Climate change and winter sports: Environmental and economic threats*. Paper presented at 5th World Conference on Sport and Environment, Turin, Italy.
- Climatenexus. (2015). *Climate change and sports*. Retrieved from <http://climatenexus.org/learn/heat-and-cold/climate-change-and-sports>
- Cooper, M. A. (1980). Lightning injuries: Prognostic signs for death. *Annual of Emergency Medicine*, 9, 134–138.
- Cooper, M. A., & Marshburn, S. (2005). Lightning strike and electric shock survivors, international. *NeuroRehabilitation*, 20, 43–47.
- DeChano, L. M., & Hruska, L. (2006). The sport–physical environmental relationship. In L. M. DeChano & F. M. Shelley (Eds.), *The geography-sports connection: Using sports to teach geography* (pp. 5–16). Jacksonville, AL: National Council for Geographic Education.
- DeFranco, M. J., Baker, C. L., DaSilva, J. J., Piasecki, D. P., & Bach, B. R., Jr. (2008). Environmental issues for team physicians. *American Journal of Sports Medicine*, 36, 2226–2237.
- D’Ippoliti, D., Michelozzi, P., Marino, C., de’Donato, F., Menne, B., Katsouyanni, K., & Perucci, C. A. (2010). The impact of heat waves on mortality in 9 European cities: Results from the EuroHeat project. *Environmental Health*, 9, 1–9.
- EPA. (2016a). *Causes of climate change*. Retrieved from www3.epa.gov/climatechange/science/causes.html
- EPA. (2016b). *Climate change: Basic information*. Retrieved from www3.epa.gov/climatechange/basics/
- EPA. (2016c). *International*. Retrieved from www3.epa.gov/climatechange/impacts/international.html
- EPA. (2016d). *Society*. Retrieved from www3.epa.gov/climatechange/impacts/society.html
- Hendler, N. (2005). Overlooked diagnoses in chronic pain: Analysis of survivors of electric shock and lightning strike. *Journal of Occupational and Environmental Medicine*, 47, 796–805.
- IPCC. (2013). *Fifth assessment report*. Retrieved from www.climatechange2013.org/images/report/WG1AR5_ALL_FINAL.pdf
- Jensenius, Jr., J. S. (n.d.). *A detailed analysis of lightning deaths in the United States from 2006 through 2013*. National Weather Service, NOAA. Retrieved from www.lightningsafety.noaa.gov/resources/Recent-LightningDeaths.pdf
- König, U. (1998). *Tourism in a warmer world – implications of climate change due to enhanced greenhouse effect for the ski industry in the Australian Alps*. University of Zurich, Wirtschaftsgeographie und Raumplanung: Zurich.

- Kroh, K. (2013). Endless summer: How climate change could wipe out surfing. *ClimateProgress*. Retrieved from <http://thinkprogress.org/climate/2013/08/01/2164691/endless-summer-how-climate-change-could-wipe-out-surfing/>
- Kroh, K. (2014). Extreme heat threatens lives of World Cup players. *ClimateProgress*. Retrieved from <http://thinkprogress.org/climate/2014/06/26/3453392/world-cup-heat-illness/>
- Leberfinger, M. (2015, March 19). World Cup to shift seasons in 2022 to avoid Qatar's summer heat. *AccuWeather*. Retrieved from www.accuweather.com/en/weather-news/2022-fifa-world-cup-qatar-heat-shift-to-fall/43745676
- Lippi, G., Guidi, G. C., & Maffulli, N. (2008). Air pollution and sports performance in Beijing. *International Journal of Sports Medicine*, 29, 696–698.
- Lopez, R. E., & Holle, R. L. (1986). Diurnal and spatial variability of lightning activity in northeastern Colorado and central Florida during the summer. *Monthly Weather Review*, 114, 1288–1312.
- Maghsoudi, H., Adyani, Y., & Ahmadian, N. (2007). Electrical and lightning injuries. *Journal of Burn Care & Research*, 28, 255–261.
- McKenzie, D. C., & Boulet, L. (2008). Asthma, outdoor air quality and the Olympic Games. *Canadian Medical Association Journal*, 179, 543–548.
- Meehl, D. A., Stocker, T. F., Collins, W. D., Friedlingsteing, P., Gaye, A. T., Gregory, J. M., . . . Zhao, Z. (2007). Global climate projections. In S. Solomon, D. Qin, M. Manning, Z. Chen, M. Marquis, K. B. Averyt, M. Tignor, & H. L. Miller (Eds.), *IPCC climate change 2007: The physical science basis* (pp. 747–845). Cambridge: Cambridge University Press.
- Miller, B. (2014). Don't sweat it: Sochi's warm weather explained. *CNN*. Retrieved from www.cnn.com/2014/02/11/world/europe/sochi-weather-explained
- NASA. (2015). *NASA earth exchange global daily downscaled projections*. Retrieved from <https://cds.nccs.nasa.gov/nex-gddp/>
- National Basketball Association. (2015). *American Airlines Arena is world's first sports and entertainment facility to achieve LEED gold recertification*. Retrieved from www.nba.com/heat/news/americanairlines-arena-worlds-first-sports-entertainment-facility-achieve-leedr-gold
- National Oceanic and Atmospheric Administration. (2016). *Trends in atmospheric carbon dioxide: Full Mauna Loa CO₂ record*. Retrieved from www.esrl.noaa.gov/gmd/ccgg/trends/full.html
- NCA. (2015). Sea level rise. Retrieved from <http://nca2014.globalchange.gov/report/our-changing-climate/sea-level-rise>
- Richardson, N. (2015). We're melting! Climate change and the snow sports industry. *Climate Solutions*. Retrieved from <http://climatesolutions.org/article/1437692149-climate-change-melting-snow-recreation-industry>
- Schaeffer, M., Hare, W., Rahmstorf, S., & Vermeer, M. (2012). Long-term sea-level rise implied by 1.5°C and 2°C warming levels. *Nature Climate Change*, 2, 867–870.
- Schube, S. (2015, February 24). 10 reasons why the 2022 World Cup moving to winter is a huge deal. *GQ Magazine*. Retrieved from www.gq.com/story/10-reasons-why-the-2022-world-cup-moving-to-winter-is-a-huge-deal
- Scott, D., Steiger, R., Rutt, M., & Johnson, P. (2014). *The future of the Winter Olympics in a warmer world*. University of Waterloo, Waterloo, Ontario.
- Sheinin, D. (2014, February 10). Winter Olympics in Sochi are offering summer temperatures, challenging conditions. *Washington Post*. Retrieved from www.washingtonpost.com/sports/olympics/winter-olympics-in-sochi-are-offering-summer-temperatures-challenging-conditions/2014/02/10/33bbac9a-927a-11e3-b3f7-f5107432ca45_story.html
- Streets, D. G., Fu, J. S., Jang, C. J., Hao, J., He, K., Tang, X., . . . Yu, C. (2007). Air quality during the 2008 Beijing Olympic Games. *Atmospheric Environment*, 41, 480–492.
- Waldron, T. (2013). Why America's major sports leagues are talking about climate change. *ThinkProgress*. Retrieved from <http://thinkprogress.org/sports/2013/11/21/2980401/major-sports-leagues-action-climate-change-good-business/>
- Watson, A. I., Lopez, R. E., & Holle, R. L. (1994). Diurnal cloud-to-ground lightning patterns in Arizona during the southwest monsoon. *Monthly Weather Review*, 122, 1716–1725.

- World Health Organization. (2016). *Zika virus*. Retrieved from www.who.int/mediacentre/factsheets/zika/en/
- Yang, J., & Wan, C. (2010). Progress in research on the impacts of global climate change on winter ski tourism. *Advances in Climate Change Research, 1*, 55–62.
- Zacharias, S., Koppe, C., & Mücke, H. G. (2014). Influence of heat waves on ischemic heart diseases in Germany. *Climate, 2*, 133–152.

6

SPORT-ENVIRONMENTAL SUSTAINABILITY (SPORT-ES) EDUCATION

Greg Dingle and Cheryl Mallen

The vast natural environment of planet Earth is changing, and global-scale human activities are the predominant drivers of such change. Human-induced changes to Earth's complex and interconnected ocean, freshwater, land, and atmospheric ecosystems have been established through a range of empirical observations and analyses (e.g., IPCC, 2007, 2014; Rockström et al., 2009; UNEP, 2005, 2007). The most recent United Nations (UN) assessment of the state of the Earth's ecosystems argued that "the currently observed changes to the Earth System are unprecedented in human history" (UNEP, 2012, p. 6). Previous UN assessments have echoed this conclusion (UNEP, 2002, 2007), with one asserting that our Earth had changed "more rapidly and extensively than in any comparable period of time in human history" (UNEP, 2005, p. 1). These conclusions were reached by the work of thousands of the world's best scientists and several rounds of peer-reviewed research.

Particular among these environmental changes is anthropogenic climate change, a "wicked" problem of global scale (Prins & Rayner, 2007; Winn, Kirchgeorg, Griffiths, Linnenluecke, & Gunther, 2011). The unintended consequences of climate change – including rising ocean and land temperatures, extreme weather events, rises in sea levels, and reduced polar ice cover (IPCC, 2014) – have been characterized as "extreme damage to the natural environment" that is "unpredictable," difficult to control and manage, and potentially irreversible (Bansal & Hoffman, 2012; Solomon, Plattner, Knutti, & Friedlingstein, 2009; Winn et al., 2011). As a consequence, environmental changes of such magnitude and urgency are driving demand for sustainability (Benn, Dunphy, & Griffiths, 2014). Such calls for sustainability extend to the sport sector that, like other industrial sectors, is not exempt from the impacts of such environmental changes (Mallen, Adams, Stevens, & Thompson, 2010).

Sport and the natural environment have a "dualistic relationship" (Morelli, 2011, p. 3). This relationship involves a reciprocal dependency between the two entities. For instance, where would sport be without the mountains used for the multiple forms of skiing and snowboarding? Or without the natural waterways used for canoe and kayak racing, sailing, and marathon swimming? Sport must thus play a role in safeguarding the natural environment, as it is critical for use by future generations.

This chapter considers environmental sustainability and/or sustainable development and how higher education for sport management can respond to the challenges of teaching and learning sustainability. To give context to such challenges, we begin by considering the philosophical

origins of sustainability. Two related concepts are then introduced: sport environmental sustainability, or the field characterized as *sport-ES* (Mallen & Chard, 2011; Mallen, Stevens, & Adams, 2011) and *natural capitalism* (Cordano, Ellis, & Scherer, 2003). Literature on sustainability education, typically known as *Education for Sustainable Development* (ESD) (Sterling, 2012; UN, 2015) but sometimes referred to as *Education for Sustainability* (EfS) (Jones, Selby, & Sterling, 2010; G. Scott, Tilbury, Deane, & Sharp, 2012), is offered, along with sport-ES education. Finally, four foundational steps and two pedagogical approaches are considered for sport-ES education.

Background to sport-ES education

Philosophical origins of environmental sustainability

Perspectives of sustainability and the natural environment – and therefore sport-ES – have emerged from deeper philosophical debates about humanity’s relationship with nature. Two contrasting perspectives dominate this debate and so inform discussions about environmental sustainability: (1) *anthropocentrism*, a view centered on the needs of humans where nature is valued only for what material benefits it can provide; and (2) *ecocentrism*, a view centered on the needs of nature where it is valued for its own sake by humans (Brymer, Downey, & Gray, 2009; Catton & Dunlap, 1980; Gagnon-Thompson & Barton, 1994; Hoffman & Sandelands, 2005; Vlek & Steg, 2007). The conceptualization of humanity’s relationship with nature into these two contrasting views gained recognition in environmental psychology literature dating back to the 1960s (Gifford, 2007).

Anthropocentric and ecocentric views characterize human perceptions of what nature is and our historical relationship with it. When considered from a purely “anthropocentric or materialistic perspective,” the natural environment is everything that is “*other* to humankind” (Brymer et al., 2009, p. 196 [original emphasis]; Mathews, 2006). However, aligned with calls for sustainability is the inextricable relationship that humans have with nature. Indeed, Schultz (2002) explains that humans often forget that we, too, are, “part of nature”:

We are born in nature; our bodies are formed of nature; we live by the rules of nature. As individuals, we are citizens of the natural world; as societies, we are bound by the resources of our environment; as a species, our survival depends on an ecological balance with nature.

(p. 61)

Despite what Brymer et al. (2009) calls “popular perceptions to the contrary,” humanity is undeniably a “part of the natural world,” and so this fundamental truth is consistent with efforts to achieve the sustainability of the natural environment and provide ESD/EfS. However, we will return to the theme of anthropocentric and ecocentric perspectives in the section ahead on “standalone” sport-ES courses.

Literature on sport-ES

There is a growing body of research and other literature pertaining to sport-ES. This is exemplified by a content analysis of a sport-related journal sample by Mallen, Stevens, and Adams (2011) and updated by Mallen in Chapter 2 of this text. However, for this chapter, analysis of the relevant literature indicated that there was no scholarly work that refuted the claim that sport

is one of many industrial sectors that contributes to climate change and causes other harmful impacts on the natural environment. On the contrary, there is a general acceptance across sport-ES literature that sport does adversely affect the natural environment, but that there are a range of strategies for mitigating such harm. A good illustration of such work is Casper and Pfahl's (2015a) edited book, *Sport Management and the Natural Environment: Theory and Practice*, which is a major and welcome addition to the literature that examines sport's relationship with the environment from a variety of management perspectives.

Other examples of literature on sport-ES include Fairley, Ruhanen, and Lovegrove's (2015) case study for educational purposes on climate change and pond hockey; Trendafilova et al.'s (2014) review of current and future trends in sport-ES; Phillips and Turner's (2014) manuscript on sport and water use; MacIntosh, Apostolis, and Walker's (2013) work on perceptions of safeguards for mountains by ski resorts; and Dingle's (2009) paper on environmental sustainability literature and motorsport. Further, other work has offered a framework for classroom debates on sport-ES (Mallen & Chard, 2011) and provided a vision of sport-ES at sport facilities of the future (Mallen & Chard, 2012). Such texts could be valuable to a sport-ES educational program; however, generally there is a gap in the ESD/EfS literature as it pertains to sport, or what might be called "sport-ES education."

Education for sustainability and sport-ES

It is ironic that there is a gap in the literature on sport-ES education when for over a decade in other disciplines, there has been significant advances in ESD/EfS. As König (2015, p. 105) has noted, this is underpinned by attempts to address complex environmental problems that invite society – including higher education – to “re-frame, un-learn, and re-learn fundamentally how humans relate to each other and the environment” (p. 105). This was reiterated by Lotz-Sisitka, Wals, Kronlid, and McGarry (2015, p. 73) in their contention that higher education institutions “need to be reconsidered to enable students and staff to deal with accelerating change, increasing complexity, contested knowledge claims and inevitable uncertainty” (p. 73).

To support calls for ESD/EfS, the UN declared the period from 2005–2014 the “Decade of Education for Sustainable Development” (UNESCO, 2005). This UN “decade” was aimed at encouraging the integration of “principles and practices of sustainable development into all aspects of education and learning” (Buckler & Creech, 2014, p. 5). The UN's final report on this “decade” indicated that “a strong trend can now be seen to make education more relevant to the social, environmental and economic challenges that the world faces today” (Buckler & Creech, 2014, p. 5). In particular, “participatory learning processes, critical thinking and problem-based learning are proving particularly conducive to ESD” (Buckler & Creech, 2014, p. 7).

A challenge outlined in the UN Final Report was the need for “further alignment of education and sustainable development sectors” (Buckler & Creech, 2014, p. 8). The UN's commitment to sustainable development education was reaffirmed to 2030 to “ensure that all learners acquire the knowledge and skills needed” (UN, 2015, p. 2). Iyer-Raniga and Andamon (2016, p. 106) concurred and reported that within the sustainability movement, the “focus has shifted from knowledge of natural ecosystems to equipping people with knowledge skills and understandings necessary to make decisions based on environmental, social and economic implications” (p. 106). However, not all researchers agree with the progress, with some noting that the “inclusion of EfS has been slow to materialise” (Christie, Miller, Cooke, & White, 2015, p. 656).

Tarrant and Thiele (2014) argued that “at its best, sustainability education mentors students to become informed and critical analysts of the world, effective agents of change and stewards

of the environment” (p. 54). Moore (2005) described the value of sustainability education from the perspective of a doctoral student and indicated that:

The message is quite simple – a paradigm shift needs to occur if we are going to stop the increasing global rates of human-caused environmental and social degradation. The difficult question is, how can education include the dialogue and actions necessary to create this kind of change?

(p. 79)

Moore (2005, p. 78) further argued:

Sustainability education is defined as education that concentrates on the concept of sustainability in a manner that fits with the values of sustainability. What we teach, what we don't teach, and how we teach are all considered when creating sustainability education practices.

(p. 78)

Despite some notable exceptions (e.g., Seattle University's Certificate program in Sport Sustainability Leadership; Seattle University, 2016), education in sport-ES has yet to be fully researched, debated, and implemented within the sport academy. Four foundational steps and two pedagogical approaches are offered to aid in this process.

Foundational steps in sport-ES education

Foundational step 1: the role of research and debate in defining sport-ES

The authors of this chapter propose that first, faculty and graduate students need to research, debate, and define sport-ES for the multiple entities within the sport industry. Given the complexity of defining sport-ES, this first step is proposed as a key measure in sport-ES education. According to Schwartz (2009), complexity generates challenges and navigational issues in ES. Further, defining sport-ES is seen as an aid in managing the complexity of the topics, in particular due to the “ambiguity, controversy and uncertainty both with respect to what is going on and with respect to what needs to be done” (Lotz-Sisitka et al., 2015, p. 73). It is proposed that these challenges and navigational issues can be managed, in part, with a guiding definition. This raises the question: Can one definition for sport-ES be found that applies to all entities within sport? For instance, can one definition be applicable to public and private sport entities, as well as amateur to the professional and not-for-profit sport? Perhaps multiple definitions will be required. Adding to the complexity of defining sport-ES, another question arises: How can the definition be applied to the diverse range of entities in sport management education? Many of these diverse entities are addressed in specific courses, such as marketing, sponsorship, ethics, law, media, globalization, social media, sport policy, the politics of sport, finance and accounting, sales/consumption, and sport equipment and apparel manufacturing. Additionally, can a definition encompass the multiple elements that can be considered when acting sustainably? This includes understanding areas such as measuring resources used; cleaner production and waste management (e.g., rethinking, reduce, recycling, renewable resources, preservation of resources); clean energy sources; strategies concerning air, land, and water management; reporting; transparency; and innovations. A definition of sport-ES that is suitable for all contexts in the sport industry is currently elusive.

Foundational step 2: identify a vision for sport-ES

Second, sustainability education has been noted to be “inherently problematic” (MacVaugh & Norton, 2012, p. 72). One of the problems facing sport-ES involves not knowing where sport wants to head with such education. Faculty and graduate student research and debate are therefore needed to provide visions of the future with respect to sport-ES and natural capitalism. What does the future look like if incorporating sport-ES? How can educators succeed if we do not have ideas concerning future directions in sport-ES for the multiple entities within sport? As with defining what is sustainable for organizations, (Hunting & Tilbury, 2006), sport-ES will likely benefit from a process of *envisioning* what it could, or perhaps should, be like.

Foundational step 3: develop best practices for training sport-ES educators

Interestingly, it is proposed that sport management educators need to be trained at the same time as the students. This situation can be problematic, as the educators are considered to be the cornerstone when it comes to transforming the educational institutions to become effective in ensuring students are empowered change agents in environmental sustainability (Lozano-García et al., 2008). Much work thus is needed in terms of research and debates on the best practices for training the educators in sport-ES.

Foundational step 4: understand the barriers to sport-ES education and devise strategies to overcome the barriers

Multiple barriers need to be navigated to make progress in sport-ES education. For example, barriers identified for non-sport ESD/EfS include perceived irrelevance by academic staff (Dawe, Jucker, & Martin, 2005; Sterling & Witham, 2008; Thomas, 2004), resistance among students (Perera & Hewege, 2016), and a lack of resources (Kelly & Alam, 2009; Perera & Hewege, 2016). Also, they may not have an understanding of a potential future with respect to environmental sustainability (Cotton, Bailey, Warren, & Bissel, 2009) or have a mind-set for natural capitalism. It is noted that not all sport studies programs have an interest, awareness, or desire to enrich their course curricula with the integration of sport-ES, and each higher education educator has a choice as to the curriculum content – so it cannot be mandated. Also, importantly, MacVaugh and Norton (2012) indicated that those in educational positions have been part of the generation that caused global environmental damage and, now, they may not be the right group to educate the next generation on how to safeguard the natural environment.

Additional barriers are outlined in the literature. These include an already crowded curriculum (Christie et al., 2015; Dawe et al., 2005; Sterling & Witham, 2008), limited staff awareness and expertise (Ceulemans, Prins, Cappuyns, & Conin, 2011; Dawe et al., 2005; Perera & Hewege, 2016), limited institutional commitment (Ceulemans et al., 2011; Dawe et al., 2005), and difficulty in designing assessments and organizing teaching materials (Perera & Hewege, 2016; Reid & Petocz, 2006). Further, Moore (2005, p. 85) indicated that “[u]nfortunately, there are few rewards for educators willing to embrace alternative practices in their classrooms and even fewer classrooms that create space for social change and action” (p. 85). In the Asian business school context, another barrier has been “scepticism among faculty about the importance of sustainability, . . . [and also that there is a] lack of case studies on sustainability issues” (Malik & Neal, 2012, p. 66). Furthermore, it has been argued that higher education is simply not structured to favor integration of the topic (Ceulemans et al., 2011). And finally, Lotz-Sisitka et al.

(2015, p. 74) stated, “The scientific community suggests that issues need to be understood and engaged via transdisciplinary perspectives . . . Yet, the reality is that mono-disciplinarity and mono-sectoral practice and governance activities remain dominant” (p. 74).

Overall, there are multiple barriers to sport-ES education. Furthermore, there are a limited number of suggestions in the literature for overcoming the barriers. One such suggestion offered by Benn and Dunphy (2009) was that instructor consultancy programs could be used to provide support for sustainability education. This suggestion gives rise to questions such as: In sport-ES, what could this consultancy program entail? How could it be delivered? Further, what are the resource issues and what options can be used to manage these issues? Much faculty and graduate student research is needed to answer these questions and others that aid in overcoming the difficulties facing educators with respect to sport-ES education.

Pedagogical approaches for sport-ES education

In light of the global environmental situation and the need for sport to do its part to safeguard the natural environment for future generations, we argue that there are two pedagogical possibilities for sport-ES education. These pedagogical options are (1) an introductory standalone sport-ES course and (2) the integration of sport-ES across the entire sport management educational curriculum. Each approach is discussed in turn next.

Pedagogical approach 1: a standalone sport-ES course

We argue that all change must have a starting point and that sport management programs can begin to integrate sport-ES into the curriculum with an initial standalone course. Such a course, however, is proposed as a permanent course offering within sport-ES education to provide the introduction to the topic. This approach is to be followed by long-term work to integrate sport-ES across the curriculum as outlined later in this chapter. This two-staged pedagogical approach is positioned best for the realities within the higher education institution.

Why a standalone sport-ES course?

The rationale for an initial standalone sport-ES course has three components. First, for students to develop a cohesive understanding of sustainability problems, key concepts, and approaches tools such as “systems-thinking” (Wiek, Withycombe, & Redman, 2011), a foundational course is required. Although we argue that all courses within a sport management program ought to consider the nexus between sport and the natural environment, confining such teaching and learning to the topic level alone is inadequate for the task of providing higher education students with a comprehensive understanding of the complex sustainability challenges that are a hallmark of this relationship. Sport-ES education that is limited to a mere topic risks the possibility of leaving students with a superficial and disjointed understanding of this nexus and ineffective responses to environmental sustainability problems.

Second, for sport management students to develop an understanding of sport-specific sustainability issues, a foundational course is required that critically evaluates the origins of these problems, as well as what they mean in a sport context, and that examines the sport-specific strategies that are required to address them. This position is supported by a range of literature that argues sport has “distinct and special features” that make it a “unique institution” (e.g., Crosset & Hums, 2012; Foster, Greyser, & Walsh, 2006; Hoye & Cuskelly, 2007; Kerwin, Doherty, &

Harman, 2007; Smith & Stewart, 2010; Stewart & Smith, 1999). This underpins our contention that starting with a standalone sport-ES course affords students with the opportunity to understand the sport-environment nexus, to “cross disciplinary boundaries” (MacVaugh & Norton, 2012, p. 75), and to synthesize sustainability problems and sport management strategy. Third, the sport industry is already “undertaking environmental initiatives” as part of perceived social obligations (Carroll & Shabana, 2010; Pfahl, 2015, p. 33) so sport-ES is a legitimate subject for analysis in a sport management program.

However, it is important to note that some literature is against a standalone course and strongly supports only utilizing the integration to be discussed in Pedagogical Approach 2 later, rather than our proposed combination. Despite this, the collegial nature of higher education means in a practical sense that faculty staff cannot dictate to their teaching colleagues that sport-ES be integrated into existing courses. So typically, the reality is a sport management program needs to offer a foundational sport-ES course upon which topic-level student learning can be built.

Where do we start?

So where can academics start to devise a standalone sport-ES course? Multiple questions arise. For example, what should be the intended learning outcomes for such a course? How can we include a sport-ES course with the learning resources we have already? Or do we begin by reviewing the existing courses within a sport management program and identify opportunities for teaching sport-ES as a topic? Do we begin with our acquired discipline knowledge and then seek where this intersects with sustainability literature? Or do we begin with our fundamental epistemological and ontological positions as scholars? Alternatively, do we start with our faculty colleagues whose trust and support we must have in order to introduce such a course in the first place? Given the diversity and complexity of modern academia, we may find ourselves starting in any one of these places or in several of them at the same time. In this section, therefore, we offer insights drawn from both the literature in this area and from our practical experience in advocating for the inclusion of a sport-ES course in a sport management curriculum, designing it “from scratch” and successfully teaching it. In doing so, we aim to answer some “what,” “who,” “why,” and “how” questions that are typical to introducing such a course.

Situating sport-ES within wider perspectives of knowledge and reality: choices of paradigm, epistemology, ontology, and perspective of nature

For educators with ambition for teaching ESD/EfS in sport management, one place they might begin designing a sport-ES subject is with themselves: that is, begin designing a sport-ES subject by reflecting on the possible paradigmatic, epistemological, and ontological stances that underpin their teaching and research. Given that there are five major paradigms within which scholars can situate themselves (Denzin & Lincoln, 2011) – positivism, post-positivism, critical theory, constructivism, and participatory action – teachers and researchers of sport-ES may wish to start by asking themselves the following:

- 1 What paradigm do I position my teaching and learning within?
- 2 What assumptions do I make about how knowledge is created (i.e., epistemology)?
- 3 What assumptions do I make about how reality is created (i.e., ontology)?

These questions are important as each of these paradigms have their own “criteria, assumptions, and methodological practices” (Denzin & Lincoln, 2011, p. 91) that can be used to inform the classroom activities and choices of assessment instruments. For example, in our experience in designing a sport-ES subject several years ago, prior awareness of the value of “constructivism” was crucial to preparing a cohesive subject design, a key influence on classroom activities that were intended to assist student learning of the course content, and the use of qualitative assessments that were consistent with the constructivism paradigm. This constructivist approach emphasized qualitative “how” and “why” questions in the course rather than quantitative questions that are more consistent with the positivism paradigm.

Another initial consideration for staff in a sport management program advocating teaching sport-ES is reflection on how they understand the relationship between humans and nature. By this we mean that sport management educators, and their students, may benefit from personal reflection on the anthropocentric *and* ecocentric views of nature. First, such reflection challenges sport-ES educators to clarify their own thinking about nature, humanity’s relationship with nature, and the value of sustainability thinking. Awareness of whether one’s worldview is broadly anthropocentric *or* ecocentric facilitates a critical understanding of the nature–human relationship, and may therefore clarify choices of course content. Second, students of a sport-ES standalone course may also benefit from reflection on anthropocentric and ecocentric views of nature because such awareness enables deeper understanding of systems-thinking – a vital component of thinking and acting sustainably – whose absence is identified as a key factor in environmental sustainability problems. ESD/EfS is more than just teaching students to recycle more and to use less water. As with most quality higher education, we ought to challenge students to think critically about how they understand the world. Inviting students to reflect on these two fundamental perspectives is also pedagogically consistent with similar reflective practices in other disciplines where self-awareness is considered important (e.g., student reflection on learning styles, occupational preferences, or phases of career development).

Advocacy for a sport-ES course in sport management programs

Another important milestone in introducing a sport-ES course is to persuade faculty colleagues that it is a necessary and important innovation for inclusion within any sport management program. To do so, the preparation of a strong rationale for a sport-ES course is essential. As with any curriculum innovation, a strong argument for the change needs to underpin our advocacy to our colleagues, one that utilizes the abundance of evidence that confirms that sustainability thinking is beneficial to society, nature, and the economy and that is increasingly a vital competency for graduates of higher education (Wiek et al., 2011).

We argue that the inclusion of such a course is entirely consistent with the growth of ESD/EfS in higher education curricula in other disciplines (G. Scott et al., 2012; Tilbury, 2011; Wals & Blewitt, 2010). ESD/EfS is also consistent with government and societal expectations that universities will play a leading role in creating a sustainable future (GUNI, 2011), and is therefore a valid part of the process of keeping a sport management program relevant and up to date with wider sectoral and societal developments. In answering the “why” question, this likely means preparing a draft outline of the proposed course that can be distributed to faculty colleagues and discussed in program reviews. Fortunately, such advocacy is made easier today by the existence of professional associations (e.g., AASHE, 2016), and in some nations, government policy (e.g., DEWHA, 2009).

How can we conceptualize teaching a sport-ES course?

Before any higher education course can be adequately designed, a conceptual framework is needed to make the series of inter-related decisions that are required for a coherent, logical, and meaningful learning experience for students. To achieve this, we argue that the constructivist perspective of learning and teaching is useful as it is already well established in the literature and has been the basis for the development of the “constructive alignment” model that is applied widely in higher education (Biggs, 2003; Biggs & Tang, 2007, 2011). The principle of constructive alignment assumes that teachers begin the learning process by designing student learning outcomes and then *align* their teaching and assessment to those outcomes (Biggs, 1996, 2003; Biggs & Tang, 2007, 2011). It also assumes that learning is not “transmitted from teacher to learner” (Biggs, 2003, p. 1; Shuell, 1986), but rather, is *constructed* by students through learning activities. This active learning approach has been endorsed by some ESD/EfS literature (MacVaugh & Norton, 2012; Perera & Hewege, 2016).

From our experience designing a sport-ES course, we have found valuable a variation of Biggs’ constructive alignment model: Nicholson and Stewart’s (2004) strategic aligned learning model (SALM). The SALM is a four-part framework that consists of the following elements: (1) learning *objectives* (i.e., outcomes), (2) learning *resources*,¹ (3) learning *activities*, and (4) learning *assessments*. Consistent with Biggs’ constructivist model, Nicholson and Stewart argued that any educator must begin by asking themselves: What is it that I want the students to learn? This question is answered to a significant extent when the educator sets the learning objectives/outcomes. To aid learning, the SALM systematically aligns learning objectives, resources, activities, and assessments. That is, learning assessments are based on the learning activities, and the learning activities are based on the learning resources, which in turn are based on the original learning objectives. Nicholson and Stewart argued that “students *construct* meaning through relevant learning activities” such as reading, discussion, and writing, and so the teacher is therefore is a “catalyst” for learning. An overview of Nicholson’s (2005) SALM is offered in Table 6.1. For a sport-ES course, the SALM might lead to the examples provided in Table 6.2.

What should be taught?

Fortunately for scholars contemplating the introduction of a sport-ES course, this question is much easier to answer today than it was several years ago, although educators will still need to decide

Table 6.1 Strategic aligned learning model (SALM) of teaching and learning

Phase 1 – Learning Objectives	Phase 2 – Learning Resources	Phase 3 – Learning Activities	Phase 4 – Learning Assessments
Course (or Topic) learning outcomes determining the appropriate resources, activities, and assessment in Phases 2, 3, and 4.	Resources provided or identified to assist with achieving the outcomes identified in Phase 1 and to inform the activities in Phase 3.	Activities undertaken, demonstrating knowledge gained in Phase 2, honing skills in preparation for Phase 4, and achieving the outcomes of Phase 1.	Assessment tasks to demonstrate that the outcomes in Phase 1 have been achieved and the activities in Phase 3 were completed successfully.

Note. Adapted from “The Strategic Alignment Learning Model – A Framework for Teaching and Learning,” by M. Nicholson & B. Stewart, 2004, Paper presented at Learning Matters Symposium, Melbourne, Australia.

Table 6.2 Two examples of how the SALM might be applied in a standalone sport-ES course

Phase 1 – Learning Objectives	Phase 2 – Learning Resources	Phase 3 – Learning Activities	Phase 4 – Learning Assessments
Understand the reasons for key global environmental problems.	Journal articles, scientific reports, film/documentaries, websites	Reading, class discussion, critical reflection of the learning resources.	Essay/research paper
Critically evaluate the environmental sustainability of an existing sport organization	Sport-ES textbook, journal articles, case studies, websites	Reading, class discussion of textbook chapter or case studies, analyze the ecological (or carbon) footprint of a sport organization, field trip to a LEED-certified sport stadium	Case study report and/or presentation, synthesis report that includes ecological (or carbon) footprint analysis of a sport organization, written reflection on a field trip to a LEED-certified sport stadium

what to emphasize. In recent years, the content available for sport-ES education has advanced significantly due to a range of scholarly publications (e.g., Casper & Pfahl, 2015b; Inoue & Kent, 2012; Mallen, Chard, Keogh, & Mansurov, 2015; McCullough, Pfahl, & Nguyen, 2016; Pfahl, 2011; Trendafilova & Nguyen, 2015). The work of these scholars has added considerable depth to the sport-specific aspects of ESD/EfS and builds upon earlier contributions that were written for practitioners as much as scholars (e.g., Chernushenko, Stubbs, Van Der Kamp, & UNEP, 2001; Stevens, 2008). Common threads among these learning resources have been initial discussion of the environmental basis to calls for sustainability, followed by strategic or tactical responses, and then sport-specific considerations (e.g., marketing, sponsorship, facility management).

However, educators seeking a greater emphasis on the sociological dimensions of sustainability or on the organizational implications of particular environmental problems (e.g., climate change) may need to supplement these sport-specific ES texts with non-sport management literature (e.g., Benn et al., 2014; Linnenluecke & Griffiths, 2015; Pinkse & Kolk, 2012; Weinhofer & Hoffmann, 2010). Nevertheless, there is now much sport-specific literature available to support a standalone sport-ES course, and particularly with developments in North America (e.g., Leadership in Energy and Environmental Design, Green Sports Alliance), there are now sufficient learning resources to enhance student learning.

Although there is no single way to design a sport-ES course, one possibility is to take a competency-based approach. Five competencies have been identified as appropriate outcomes of ESD/EfS education and may therefore also apply to sport-ES. These are (1) systems-thinking, (2) anticipatory, (3) normative, (4) strategic, and (5) interpersonal competencies (Wiek et al., 2011, p. 205). Such competencies are considered valuable for the task of helping students to become future “change agents” and “problem solvers” (Wiek et al., 2011; Willard et al., 2010) and therefore could be used to guide the development of learning objectives for a sport-ES course.

Of these five competencies identified by Wiek et al., sport-ES educators should note that *systems-thinking* in particular is a valuable tool for ESD/EfS in higher education. Systems of the environment, society, and business are widely discussed in ESD/EfS literature, and so systems-thinking is also consistently identified as useful for ESD/EfS (e.g., Corcoran & Wals, 2004;

Hunting & Tilbury, 2006; MacVaugh & Norton, 2012; G. Scott et al., 2012; Sterling, 2004; Wiek et al., 2011). As T. Porter and Córdoba (2009, p. 324) note, systems-thinking can help students to see themselves in a wider context that is both natural and human made and understand the “complexity and tensions behind sustainability-related issues and provide frameworks and tools for developing and implementing solutions” (p. 324). The “fundamental guiding principle” of systems-thinking – that the organization ought to be understood as “a system to design meaningful interventions” – opens up the potential for students to be agents of change for sustainability in sport organizations. However, sport-ES educators may need to appreciate that there are three “broad” options for systems-thinking – functionalist, interpretive, and complex adaptive systems (CAS) – and that these three views encourage the application of different theories. For instance, the functionalist view encourages the use of hard and general management theories; the interpretive view encourages symbolic interactionism; and the CAS view encourages the application of complexity theory, non-linear systems, and complex adaptive systems when teaching sustainability.

Another possible approach to designing a sport-ES course is to adopt a thematic approach supported by broader organizational perspectives. In a thematic approach, sport-ES educators might begin with a foundational theme of environmental arguments for sustainability. By beginning with the extent and nature of global environmental change, such as that summarized in the introduction to this chapter, a compelling platform would be created for students upon which more sport-specific issues and concerns can be overlaid. Examples of such issues might include overpopulation; human consumption of natural resources; anthropogenic climate change; and associated impacts on land, water (oceans and freshwater), and atmospheric and biodiversity ecosystems. Having established the *environmental case* for sustainability, sport-ES educators might then link such environmental change to themes of *social* impacts and then a theme of *business* impacts.

With this basic structure as an underpinning, sport-specific and discipline-specific themes are contextualized and so deeper analysis is possible. For example, sport-ES educators from a sport sociology background might choose sociological perspectives as the frame for studying how sustainability intersects with sport. Alternatively, sport-ES educators from the sport management background might use theoretical perspectives of organizations (e.g., systems theory, institutional theory, critical thinking theory, resource-based view) as the frames for such learning. Building upon such a basic course structure, sport-ES educators can then scaffold the “inside-out” and “outside-in” organizational perspectives advocated in management literature (M. E. Porter & Kramer, 2006; M. E. Porter & Reinhardt, 2007) and which has been applied in recent sport-ES literature (e.g., Casper & Pfahl, 2015a; Casper & Pfahl, 2015b; Dingle, 2014). The “inside-out” perspective simply refers to the view that organizations (the “inside”) have an impact on the natural environment in which they operate (the “outside”). Such impacts are usually adverse ones and include direct ones such as pollution of all kinds and land clearing, but also indirectly to problems like climate change through greenhouse gas (GHG) emissions. In contrast, the “outside-in” perspective is simply one where the natural environment (the “outside”) has the potential to disrupt the operations of organizations (the “inside”) (Linnenluecke & Griffiths, 2012; Linnenluecke, Griffiths, & Winn, 2013; Linnenluecke, Stathakis, & Griffiths, 2011). Examples of such outside-in impacts include extreme weather events such as storms, floods, and droughts that damage buildings, equipment, or logistics systems. In a sporting context, examples of this outside-in phenomenon include the impacts of a warmer climate and extreme weather events (e.g., the impacts of a warmer climate on snow cover at the 2014 Sochi Olympics [Koch, 2014] or on pond hockey in the United States [Fairley et al., 2015], or the extreme weather that led to the flooding of Suncorp Stadium in Australia in 2011).

As Winn & Kirchgeorg (2005) note, management researchers have concentrated more on the inside-out perspective than outside-in, and the same is perhaps true of literature in the sport-ES field. Although this claim is not empirically validated, given that sport-ES literature to date is arguably focused on the impacts of organizations on the natural environment rather than nature's impact on organizations, that this may also apply to sport-ES education represents a potential blind spot in such teaching. This is because it does not account for the impacts of the widespread global change that has been empirically documented on sports that are vulnerable to such change, especially those that are directly climate dependent. To overcome this limitation, teachers of sport management contemplating a standalone sport-ES course can supplement their learning resources with a range of both sport and non-sport literature (e.g., Berkhout, 2012; Chard & Mallen, 2012, 2013; Dawson & Scott, 2013; Dolf & Teehan, 2015; Fairley et al., 2015; Phillips & Turner, 2014; D. Scott, Steiger, Ruttly, & Johnson, 2015; Steffen et al., 2015).

The faculty-level challenge for integrating ES

Assuming that there is adequate institutional support (e.g., support from university-level leaders or the head of the school) and sufficient resources and expertise, another challenge worthy of consideration is that of overcoming the skepticism of faculty colleagues who may see sport-ES education as “fashion” rather than as serious and important scholarship. To overcome this, advocacy *before, during, and after* introducing sport-ES education is needed in two ways: first, having a sport-ES “champion”; and second, having “teams” of ES champions (Hunting & Tilbury, 2006). Advocacy for ES is always more effective when groups of people are making the “case” for such change, so as Scott et al. (2012) suggest, academics hoping to introduce a sport-ES course need to build coalitions with supportive colleagues who understand the value of sustainability to industry, society, and the natural environment. Limiting such advocacy to a lone ES champion risks the hard-won sport-ES course being omitted at the next course review or when that champion leaves to join another institution.

Pedagogical approach 2: integrating sport-ES across the curriculum

Following the immediate inclusion of an initial standalone course to the sport management curriculum, the authors of this chapter propose that an integrated sport-ES approach be assimilated across the sport management curriculum for advanced understandings of the topic. This integration approach responds to the call for academic institutions to reorganize in order to relate teachings to society's complexities and dynamic systems (Miller, Muñoz-Erickson, & Redman, 2011). According to Iyer-Raniga and Andamon (2016), “The general direction of education for sustainability is moving increasingly towards integration and innovation” (p. 105). This position is supported by multiple researchers that purport sustainability is transdisciplinary and can be taught across fields (Christie et al., 2015; Dey, Kurucz, & Colbert, 2010; MacVaugh & Norton, 2012). In sport management, this means integrating sport-ES across fields such as marketing, sponsorship, finance, economics, globalization, sport for development, and facility and event management. According to Moore:

The pedagogy of sustainability education is about creating spaces where disciplines are not piled on top of one another but instead integrated in new ways. Educators need to move into these spaces as collaborators and cocreators of knowledge instead of experts and non-experts. By changing the practices in classrooms, there is a potential for transformations to occur – for individuals, organizations, and systems.

(p. 80)

This type of integration is beyond the topic being added to one lecture within an ethics or social responsibility course, or what MacVaugh and Norton (2012) called a “bolt-on” topic. It is not proposed that courses need to be fully revised for sport-ES; instead, the integration needs to be part of the regular issue management discussion, and the production and consumption developments, for the multiple fields within sport management. It is instituting natural capitalism into all decisions within the business of sport.

The transformation for sport-ES to be integrated within educational programs, however, can be difficult to generate (Moore, 2005). Lotz-Sisitka, Wals, Fronlid, and McGarry (2015) argued that this difficulty stemmed from the fact that we “need to learn how to cross disciplinary boundaries” (p. 74). Learning for transdisciplinary education may take years to develop and incorporate within sport management programs. This difficulty and time frame is the key reason why we argue that the standalone sport-ES course is the introductory stage for sport-ES education. A generation of students simply cannot wait for educators and programs to learn, adapt, and fully prepare them for their future.

The question, thus, arises: “If transformative learning is complex, uncomfortable, and time consuming, how do academics propose to make the radical shift toward it?” (Moore, 2005, p. 84). This is a key question in sport management, and a guiding body of literature has yet to be developed. However, some literature could aid in our understandings if applied to sport management programs. For instance, Wiek, Xiong, Brundiers, and van der Leeuw (2014) described the problem and successes of the integrated undergraduate and graduate sustainability program at the Arizona State School of Sustainability. Also, Marcus, Coops, Ellis, and Robinson (2015) discussed the experiences at the University of British Columbia, Canada, when integrating environmental sustainability throughout the curriculum. Further, MacVaugh and Norton (2012) noted that sustainability was integrated across the curriculum at the University of Gloucestershire Business School. They defined their integration as “de-emphasising disciplinary boundaries” (p. 74).

Overall, as outlined earlier, sport management literature in environmental sustainability is advancing, but there is a lack of focus on pedagogy in sport-ES. The authors of this chapter call upon faculty and graduate students to conduct research to guide educators towards an integrated pedagogy for sport-ES. This includes the study of educator training for the topic and integration strategies, including best practices. Finally, research is needed to aid in reframing what progress means in sport and to offer reimaginations of sport in terms of sustainability that respects the limits of our planet.

Conclusion

Sport-ES education is an emerging field that is a rational response to global environmental change and is consistent with wider developments in ESD/EfS in higher education. To advance the field of teaching and learning sustainability, especially that of environmental sustainability, we have argued that sport-ES should be integrated into every higher education program for sport studies/management. We have therefore proposed that there are two major pedagogical options for both undergraduate and graduate sport programs: (1) a standalone course and (2) sport-ES that is integrated across multiple courses. A standalone course enables students to have an in-depth introduction to ES that allows them to then explore sport-ES in a more integrated way within multiple courses, and eventually to apply this to multiple sport management specializations upon graduation. Given the urgency and scale of the need for all disciplines to be environmentally sustainable, including sport management, a mature sport management program should have both a standalone foundational course *and* ES integrated across multiple courses. However, we recognize that within a crowded curriculum, achieving both standalone and integrated sport-ES courses is still no easy thing to do. In light of this reality, we have outlined strategies for

teaching and learning sport-ES within such constraints. However, to facilitate such courses and programs, sport scholars need to be prepared to undertake research into the teaching and learning of sport-ES. With this in mind, a sport-ES education research agenda should feature different levels of analysis, including principles and theories of teaching and learning; course-level design; and student-level experiences of learning resources, activities, and assessments.

Note

1 The SALM extends Bigg's constructive alignment model by adding a fourth element: learning resources.

References

- AASHE. (2016). *Association for the advancement of sustainability in higher education*. Retrieved from www.aashe.org/
- Bansal, P., & Hoffman, A. (2012). *The Oxford handbook of business and the natural environment*. Oxford: Oxford University Press.
- Benn, S., & Dunphy, D. (2009). Action research as an approach to integrating sustainability into MBA programs: An exploration study. *Journal of Management Education*, 33, 276–295.
- Benn, S., Dunphy, A. P., & Griffiths, A. (2014). *Organizational change for corporate sustainability* (3rd ed.). London: Routledge.
- Berkhout, F. (2012). Adaptation to climate change by organizations. *Wiley Interdisciplinary Reviews: Climate Change*, 3(1), 91–106.
- Biggs, J. (1996). Enhancing teaching through constructive alignment. *Higher Education*, 32, 347–364.
- Biggs, J. (2003). *Aligning teaching and assessing to course objectives*. Paper presented at the Teaching and Learning in Higher Education: New Trends and Innovations, Aveiro, Portugal.
- Biggs, J., & Tang, C. (2007). *Teaching for quality learning at university: What the student does* (3rd ed.). Maidenhead, UK: Society for Research into Higher Education and Open University Press.
- Biggs, J., & Tang, C. (2011). *Teaching for quality learning at university*. Maidenhead, UK: McGraw-Hill and Open University Press.
- Brymer, E., Downey, G., & Gray, T. (2009). Extreme sports as a precursor to environmental sustainability. *Journal of Sport & Tourism*, 14, 193–204.
- Buckler, C., & Creech, H. (2014). *Shaping the future we want. United Nations Decade of Education for Sustainable Development (2005–2014): Final report*. Paris: UNESCO.
- Carroll, A. B., & Shabana, K. M. (2010). The business case for corporate social responsibility: A review of concepts, research and practice. *International Journal of Management Reviews*, 12, 85–105.
- Casper, J., & Pfahl, M. E. (2015a). Sport and the natural environment. In J. Casper & M. E. Pfahl (Eds.), *Sport management and the natural environment: Theory and practice* (pp. 3–13). New York, NY: Routledge.
- Casper, J., & Pfahl, M. E. (2015b). *Sport management and the natural environment: Theory and practice*. New York, NY: Routledge.
- Catton, W. R., & Dunlap, R. E. (1980). A new ecological paradigm for post-exuberant sociology. *The American Behavioral Scientist*, 24(1), 15–47.
- Ceulemans, K., Prins, M., Cappuyns, V., & Conin, W. (2011). Integration of sustainable development in higher education's curricula of applied economics: Large-scale assessments, integration strategies and barriers. *Journal of Management and Organization*, 17, 621–640.
- Chard, C., & Mallen, C. (2012). Examining the linkages between automobile use and carbon impacts of community-based ice hockey. *Sport Management Review*, 15, 476–484.
- Chard, C., & Mallen, C. (2013). Renewable energy initiatives at Canadian sport stadiums: A content analysis of web-site communications. *Sustainability*, 5, 5119–5134.
- Chernushenko, D., Stubbs, D., Van Der Kamp, A., & UNEP. (2001). *Sustainable sport management: Running an environmentally, socially and economically responsible organisation*. Ottawa, ON: United Nations Environment Program and Green & Gold Inc.

- Christie, B., Miller, K., Cooke, R., & White, J. (2015). Environmental sustainability in higher education: What do academics think? *Environmental Education Research*, 21, 655–686.
- Corcoran, P. B., & Wals, A. (Eds.). (2004). *Higher education and the challenge of sustainability: Problematics, promise and practice*. Dordrecht, the Netherlands: Kluwer Academic Publishers.
- Cordano, M., Ellis, K., & Scherer, R. (2003). Natural capitalists: Increasing business students' environmental sensitivity. *Journal of Management Education*, 27, 144–157.
- Cotton, D., Bailey, I., Warren, M., & Bissel, S. (2009). Revolutions and second-best solutions: Education for sustainable development in higher-education. *Studies in Higher Education*, 34, 719–733.
- Crosset, T. W., & Hums, M. A. (2012). History of sport management. In L. P. Masteralexis, C. A. Barr, & M. A. Hums (Eds.), *Principles and practice of sport management* (4th ed., pp. 3–25). Sudbury, MA: Jones & Bartlett Learning.
- Dawe, G., Jucker, R., & Martin, S. (2005). *Sustainable development in higher education: Current practice and future developments: A report for the Higher Education Academy*. Retrieved from www.heacademy.ac.uk/assets/York/documents/ourwork/ta/sustainability/sustdevinHEfinalreport.pdf
- Dawson, J., & Scott, D. (2013). Managing for climate change in the alpine ski sector. *Tourism Management*, 35, 244–254.
- Denzin, N. K., & Lincoln, Y. S. (2011). Paradigms and perspectives in contention. In N. K. Denzin & Y. S. Lincoln (Eds.), *The Sage handbook of qualitative research* (pp. 91–242). Thousand Oaks, CA: Sage Publications.
- DEWHA. (2009). *Living sustainably: The Australian Government's national action plan for education for sustainability*. Retrieved from www.environment.gov.au/education/publications/pubs/national-action-plan.pdf
- Dey, A., Kurucz, E., & Colbert, B. (2010). *Integrating sustainability into business education: A workshop for Canadian business faculty*. Retrieved from http://legacy.wlu.ca/documents/42218/Integrating_Sustainability_in_Mgmt_Edn_-_May_2010_workshop_report.pdf
- Dingle, G. W. (2009). Sustaining the race: A review of literature pertaining to the environmental sustainability of motorsport. *International Journal of Sport Marketing and Sponsorship*, 11, 80–96.
- Dingle, G. W. (2014). *A study of climate change impacts and responses at organisations managing major Australian sport stadia*. (Unpublished doctoral thesis). Victoria University, Melbourne, Australia.
- Dolf, M., & Teehan, P. (2015). Reducing the carbon footprint of spectator and team travel at the University of British Columbia's varsity sports events. *Sport Management Review*, 18, 244–255.
- Fairley, S., Ruhanen, L., & Lovegrove, H. (2015). On frozen ponds: The impact of climate change on hosting pond hockey tournaments. *Sport Management Review*, 18, 618–626.
- Foster, G., Greyser, S. A., & Walsh, B. (2006). *The business of sports: Text & cases on strategy & management*. Mason, OH: Thomson.
- Gagnon-Thompson, S. C., & Barton, M. A. (1994). Ecocentric and anthropocentric attitudes toward the environment. *Journal of Environmental Psychology*, 14, 149–157.
- Gifford, R. (2007). Environmental psychology and sustainable development: Expansion, maturation and challenges. *Journal of Social Issues*, 63, 199–212.
- Global University Network for Innovation. (2011). *Higher Education in the world 4: Higher education's commitment to sustainability: From understanding to action*. New York, NY: Palgrave Macmillan.
- Hoffman, A. J., & Sandelands, L. E. (2005). Getting right with nature anthropocentrism, ecocentrism, and theocentrism. *Organization & Environment*, 18, 141–162.
- Hoye, R., & Cuskelly, G. (2007). *Sport governance*. Oxford: Elsevier.
- Hunting, S. A., & Tilbury, D. (2006). *Shifting towards sustainability: Six insights into successful organisational change for sustainability*. Retrieved from www.aries.mq.edu.au/
- Inoue, Y., & Kent, A. (2012). Sports teams as promoters of pro-environmental behavior: An empirical study. *Journal of Sport Management*, 26, 417–432.
- IPCC. (2007). *Climate change 2007: Synthesis report*. Retrieved from www.ipcc.ch/pdf/assessment-report/ar4/syr/ar4_syr.pdf
- IPCC. (2014). *Climate change 2014: Synthesis report*. Retrieved from www.ipcc.ch/pdf/assessment-report/ar5/syr/SYR_AR5_FINAL_full_wcover.pdf

- Iyer-Raniga, U., & Andamon, M. (2016). Transformative learning: Innovating sustainability education in built environment. *International Journal of Sustainability in Higher Education*, 17, 105–122.
- Jones, P., Selby, D., & Sterling, S. (Eds.). (2010). *Sustainability education: Perspectives and practice across higher education*. London: Earthscan.
- Kelly, M., & Alam, M. (2009). Educating accounting students in the age of sustainability. *Australasian Accounting Business & Finance Journal*, 3(4), 30–44.
- Kerwin, S., Doherty, A., & Harman, A. (2007). It's not conflict, it's differences of opinion: An in-depth examination of conflict in nonprofit sport boards. *Small Group Research*, 42(5), 562–594.
- Koch, W. (2014). Olympians speak out on climate change as Sochi warms up. *USA Today*. Retrieved from www.usatoday.com/story/news/nation/2014/02/12/olympians-speak-out-climate-change/5395837/
- König, A. (2015). Changing requisites to universities in the 21st century: Organizing for transformative science for systemic change. *Current Opinion in Environmental Sustainability*, 16, 105–111.
- Linnenluecke, M. K., & Griffiths, A. (2012). Assessing organizational resilience to climate and weather extremes: Complexities and methodological pathways. *Climatic Change*, 113, 933–947.
- Linnenluecke, M. K., & Griffiths, A. (2015). *The climate resilient organization: Adaptation and resilience to climate change and weather extremes*. Cheltenham, UK: Edward Elgar Publishing.
- Linnenluecke, M. K., Griffiths, A., & Winn, M. I. (2013). Firm and industry adaptation to climate change: A review of climate adaptation studies in the business and management field. *Wiley Interdisciplinary Reviews: Climate Change*, 4, 397–416.
- Linnenluecke, M. K., Stathakis, A., & Griffiths, A. (2011). Firm relocation as adaptive response to climate change and weather extremes. *Global Environmental Change*, 21, 123–133.
- Lotz-Sisitka, H., Wals, A., Kronlid, D., & McGarry, D. (2015). Transformative, transgressive social learning: Rethinking higher education pedagogy in times of systemic global dysfunction. *Current Opinion in Environmental Sustainability*, 16, 73–80.
- Lozano-García, F., Gandara, G., Orietta, P., Mario, M., Dora Elia, H., & Donald, H. (2008). Capacity building: A course on sustainable development to educate the educators. *International Journal of Sustainability in Higher Education*, 9, 257–281.
- MacIntosh, E., Apostolis, N., & Walker, M. (2013). Environmental responsibility: Internal motives and customer expectations of a winter sport provider. *Journal of Sport and Tourism*, 18, 99–116.
- MacVaugh, J., & Norton, M. (2012). Introducing sustainability into business education contexts using active learning. *International Journal of Sustainability in Higher Education*, 13, 72–87.
- Malik, N., & Neal, M. (2012). Sustainability in business education in the Asia Pacific region: A snapshot of the situation. *International Journal of Sustainability in Higher Education*, 13, 60–71.
- Mallen, C., Adams, L., Stevens, J., & Thompson, L. (2010). Environmental sustainability in sport facility management: A delphi study. *European Sport Management Quarterly*, 10, 367–389.
- Mallen, C., & Chard, C. (2011). A framework for debating the future of environmental sustainability in the sport academy. *Sport Management Review*, 14, 424–433.
- Mallen, C., & Chard, C. (2012). “What could be” in Canadian sport facility environmental sustainability. *Sport Management Review*, 15, 230–243.
- Mallen, C., Chard, C., Keogh, C., & Mansurov, A. (2015). Preparing environmentally friendly events. In J. Casper & M. Pfahl (Eds.), *Sport management and the natural environment: Theory and practice* (pp. 205–217). New York, NY: Routledge.
- Mallen, C., Stevens, J., & Adams, L. J. (2011). A content analysis of environmental sustainability research in a sport-related journal sample. *Journal of Sport Management*, 25, 240–256.
- Marcus, J., Coops, N. C., Ellis, S., & Robinson, J. (2015). Embedding sustainability learning pathways across the university. *Current Opinion in Environmental Sustainability*, 16, 7–13.
- Mathews, F. (2006). Beyond modernity and tradition: A third way for development. *Ethics and the Environment*, 11(2), 85–113.
- McCullough, B. P., Pfahl, M. E., & Nguyen, S. N. (2016). The green waves of environmental sustainability in sport. *Sport in Society*, 19, 1040–1065.
- Miller, T. R., Muñoz-Erickson, T., & Redman, C. L. (2011). Transforming knowledge for sustainability: Towards adaptive academic institutions. *International Journal of Sustainability in Higher Education*, 12, 177–192.

- Moore, J. (2005). Is higher education ready for transformative learning? A question explored in the study of sustainability. *Journal of Transformative Education*, 3(1), 76–91.
- Morelli, J. (2011). Environmental sustainability: A definition for environmental professionals. *Journal of Environmental Sustainability*, 1(1), 1–9.
- Nicholson, M. (2005). *HPS7045 sport and the media – study guide, semester 1, 2005*. School of Human Movement, Recreation and Performance. Victoria University, Melbourne, Australia.
- Nicholson, M., & Stewart, B. (2004). *The strategic alignment learning model – a framework for teaching and learning*. Paper presented at the Learning Matters Symposium, Melbourne, Australia.
- Perera, C. R., & Hewege, C. R. (2016). Integrating sustainability education into international marketing curricula. *International Journal of Sustainability in Higher Education*, 17, 123–148.
- Pfahl, M. E. (2011). *Sport and the natural environment: A strategic guide*. Dubuque, IA: Kendall Hunt.
- Pfahl, M. E. (2015). Teaching sport management and the natural environment. In J. Casper & M. E. Pfahl (Eds.), *Sport management and the natural environment: Theory and practice* (pp. 29–38). New York, NY: Routledge.
- Phillips, P., & Turner, P. (2014). Water management in sport. *Sport Management Review*, 17, 376–389.
- Pinkse, J., & Kolk, A. (2012). Addressing the climate change-sustainable development nexus. *Business & Society*, 51, 176–210.
- Porter, M. E., & Kramer, M. R. (2006). Strategy and society: The link between competitive advantage and corporate social responsibility. *Harvard Business Review*, 84(12), 78–92.
- Porter, M. E., & Reinhardt, F. L. (2007). A strategic approach to climate. *Harvard Business Review*, 85(10), 22–26.
- Porter, T., & Córdoba, J. (2009). Three views of systems theories and their implications for sustainability education. *Journal of Management Education*, 33, 323–347.
- Prins, G., & Rayner, S. (2007). *The wrong trousers: Radically rethinking climate policy*. Joint discussion paper. James Martin Institute for Science and Civilization, and London School of Economics and Political Science. University of Oxford and the MacKinder Centre for the Study of Long-Wave Event Oxford, UK.
- Reid, A., & Petocz, P. (2006). University lecturers' understanding of sustainability. *Higher Education*, 51, 105–123.
- Rockström, J., Steffen, W., Noone, K., Persson, Å., Chapin III, F. S., Lambin, E., . . . Foley, J. (2009). Planetary boundaries: Exploring the safe operating space for humanity. *Ecology and Society*, 14(2), article 32.
- Schultz, P. W. (2002). Inclusion with nature: The psychology of human-nature relations. In P. Schmuck & W. P. Schultz (Eds.), *Psychology of sustainable development* (pp. 61–78). New York: Kluwer.
- Schwartz, B. (2009). Environmental strategies as automorphic patterns of behavior. *Business Strategy and the Environment*, 18, 192–206.
- Scott, D., Steiger, R., Ruddy, M., & Johnson, P. (2015). The future of the Olympic Winter Games in an era of climate change. *Current Issues in Tourism*, 18, 913–930.
- Scott, G., Tilbury, D., Deane, L., & Sharp, L. (2012). *Turnaround leadership for sustainability in higher education: Final report, 2012*. Retrieved from www.olt.gov.au/project-turnaround-leadership-sustainability-higher-education-2011
- Seattle University. (2016). *Certificate in sport sustainability leadership*. Retrieved from www.seattleu.edu/artsci/sport-graduate/certificate-in-sport-sustainability-leadership/
- Shuell, T. J. (1986). Cognitive conceptions of learning. *Review of Educational Research*, 56, 411–436.
- Smith, A., & Stewart, B. (2010). The special features of sport: A critical revisit. *Sport Management Review*, 13(1), 1–13.
- Solomon, S., Plattner, G.-K., Knutti, R., & Friedlingstein, P. (2009). Irreversible climate change due to carbon dioxide emissions. *Proceedings of the National Academy of Sciences*, 106, 1704–1709.
- Steffen, W., Richardson, K., Rockström, J., Cornell, S. E., Fetzer, I., Bennett, E. M., . . . Sörlin, S. (2015). Planetary boundaries: Guiding human development on a changing planet. *Science*, 347(6223), 736–748.
- Sterling, S. (2004). Higher education, sustainability and the role of systemic learning. In P. B. Corcoran & A. E. J. Wals (Eds.), *Higher education and the challenge of sustainability: Problematics, promise and practice* (pp. 49–70). Dordrecht, the Netherlands: Kluwer Academic Publishers.
- Sterling, S. (2012). *The future fit framework: An introductory guide to teaching and learning for sustainability in HE*. Retrieved from www.heacademy.ac.uk/system/files/future_fit_270412_1435.pdf

- Sterling, S., & Witham, H. (2008). Pushing the boundaries: The work of the Higher Education Academy's ESD Project. *Environmental Education Research*, 14, 399–412.
- Stevens, A. (2008). *Sustainable sport: A SportBusiness Group report*. London: SportsBusiness Group.
- Stewart, B., & Smith, A. (1999). The special features of sport. *Annals of Leisure Research*, 2, 87–99.
- Tarrant, S., & Thiele, L. (2014). The web we weave: Online education and democratic prospects. *New Political Science*, 36, 1–8.
- Thomas, I. (2004). Sustainability in tertiary curricula: What is stopping it happening? *International Journal of Sustainability in Higher Education*, 5, 33–47.
- Tilbury, D. (2011). *Education for sustainable development: An expert review of processes and learning*. Paris: UNESCO.
- Trendafilova, S., McCullough, B. P., Pfahl, M. E., Nguyen, S. N., Casper, J., & Picariello, M. (2014). Environmental sustainability in sport: Current state and future trends. *Global Journal on Advances in Pure & Applied Sciences*, 3, 9–14.
- Trendafilova, S., & Nguyen, S. (2015). Corporate social responsibility and the environment in the sport industry. In J. Casper & M. E. Pfahl (Eds.), *Sport management and the natural environment: Theory and practice* (pp. 76–87). New York, NY: Routledge.
- UN. (2015). *UN decade of education for sustainable development (2005–2014)*. Paris: UNESCO.
- UNEP. (2002). *Global environment outlook 3: Past, present and future perspectives*. Retrieved from www.unep.org/geo/pdfs/keeping_track.pdf
- UNEP. (2005). *United Nations millennium ecosystem assessment. Ecosystems and human well-being: Synthesis report*. Retrieved from www.millenniumassessment.org/documents/document.356.aspx.pdf
- UNEP. (2007). *Global environmental outlook 4: Environment for development*. Retrieved from www.unep.org/geo/GEO4/report/GEO-4_Report_Full_en.pdf
- UNEP. (2012). *Global environment outlook 5: Summary for policymakers*. Retrieved from www.unep.org/geo/pdfs/keeping_track.pdf
- UNESCO. (2005). *United Nations decade of education for sustainable development (2005–2014): International implementation scheme*. Retrieved from <http://unesdoc.unesco.org/images/0014/001486/148654e.pdf>
- Vlek, C., & Steg, L. (2007). Human behaviour and environmental sustainability: Problems, driving forces, and topics. *Journal of Social Issues*, 63, 1–19.
- Wals, A. E. J., & Blewitt, J. (2010). Third-wave sustainability in higher education: Some international trends and developments. In P. Jones, D. Selby, & S. Sterling (Eds.), *Sustainability education: Perspectives and practice across higher education* (pp. 39–54). London: Earthscan.
- Weinhofer, G., & Hoffmann, V. H. (2010). Mitigating climate change: How do corporate strategies differ? *Business Strategy and the Environment*, 19, 77–89.
- Wiek, A., Withycombe, L., & Redman, C. L. (2011). Key competencies in sustainability: A reference framework for academic program development. *Sustainability Science*, 6, 203–218.
- Wiek, A., Xiong, A., Brundiars, K., & van der Leeuw, S. (2014). Integrating problem and project-based learning into sustainability programs: A case study on the School of Sustainability at Arizona State University. *International Journal of Sustainability in Higher Education*, 15, 431–449.
- Willard, M., Wiedmeyer, C., Flint, R. W., Weedon, J. S., Woodward, R., Feldmand, I., & Edwards, M. (2010). *The sustainability professional: 2010 competency survey report*. Retrieved from www.sustainabilityprofessionals.org/sustainability-professional-2010-competency-survey-report
- Winn, M. I., & Kirchgeorg, M. (2005). The siesta is over: A rude awakening from sustainability myopia. In S. Sharma & A. Aragón-Correa (Eds.), *Research in corporate sustainability: Strategic capabilities and competitiveness* (Vol. 3, pp. 232–258). Cheltenham, UK: Edward Elgar.
- Winn, M. I., Kirchgeorg, M., Griffiths, A., Linnenluecke, M. K., & Gunther, E. (2011). Impacts from climate change on organizations: A conceptual foundation. *Business Strategy & Environment*, 20, 157–173.

SECTION 2

Management and marketing



Taylor & Francis

Taylor & Francis Group
<http://taylorandfrancis.com>

7

ORGANIZATIONAL CAPACITY AND SPORT, THE ENVIRONMENT, AND SUSTAINABILITY

Making the case for capacity building

Julie Stevens

Among academics, the topic of environmental sustainability (ES) is a nascent sub-discipline within sport management (McCullough, Pfahl, & Nguyen, 2016; Trendafilova, McCullough, Pfahl, Nguyen, Casper, & Picariello, 2014). Among managers, the practice of environmental sustainability is a contemporary issue within the sport industry (Dolles & Söderman, 2010; Kellison, Trendafilova, & McCullough, 2015). As sport environmental sustainability (SES) theory and practice advance, so, too, does our understanding of the environmental impact of sport and strategies to curtail such impact. Although scholars and executives make a convincing case that sport environmental sustainability is needed, neither definitively addresses the broader question of whether sport organizations are able to attain and maintain pro-environmental organizational change. That is, do sport organizations have the capacity to be environmentally sustainable?

In order to answer this question, analysis must progress beyond “what” and “where” questions to “why” and “how” queries within SES scholarship. Practice must shift from profit-driven objectives to values-based thinking within the sport industry. Some noteworthy accomplishments within certain segments of the sport industry exist, such as in professional sport leagues (e.g., NHL, 2014) and sport venues (e.g., NRDC, 2012). Unfortunately, classic management orthodoxy that is predicated upon a short-term, output-based lens makes a shift from a single to triple bottom line (TBL; also referred to as a people-planet-profit or social-environmental-economic perspective) difficult within many industries, including sport.

In order to truly make inroads, sport leaders must move beyond mechanisms of productivity towards “models of organizing” (Bunderson, Lofstrom, & Van de Ven, 2000, p. 366). It is with this purpose in mind that the intersection of sport, ES, and capacity is addressed in this chapter. The commentary includes an overview of capacity and highlights the connection between capacity and SES research. Examples from the SES literature are profiled in order to demonstrate how sport, ES, and capacity inter-relate. The chapter concludes with suggestions about how capacity can better inform our understanding of how and why ES change may occur in sport organizations. Recommendations for future research to advance conceptual and empirical work are also offered.

Overview of capacity perspectives

Within the current management lexicon, the word “capacity” is frequently mentioned but rarely understood. The term has been examined within international development (United Nations Development Program [UNDP], 1997, 2002a, 2002b), nonprofit management (Cairns, Harris, & Young, 2005; Pratt, 2002), and to a lesser extent, organizational analysis (Greenwood & Hinings, 1996). More recently, the capacity explanation gap has driven new research within sport management (Doherty, Misener, & Cuskelly, 2014; Millar & Doherty, 2016; Misener & Doherty, 2009, 2013; Sharpe, 2006).

The concept of capacity became central within the context of international development in the early 1990s (Schacter, 2000), but “capacity building interventions have been part of the work of the United Nations system for over 40 years” (UNDP, 2002a, p. 1). At an international level, the World Bank defined capacity as “the combination of people, institutions, and practices that permits countries to achieve their development goals” (Mizrahi, 2004, p. 1). The UNDP (2002b) defined capacity development as “the process by which individuals, organizations, institutions and societies develop abilities (individually and collectively) to perform functions, solve problems and set and achieve objectives” (p. 1). At an organizational level, capacity is an “ability to perform or produce and is often in reference to potential (as in a maximum capacity)” (Hall et al., 2003, p. 3). Backer (2001) described capacity building as “strengthening non-profits so they can better achieve their mission” (p. 38).

There are two main frameworks to understand organizational capacity. They provide a starting point to understand capacity within sport entities and connect to capacity to environmental sustainability practices within the sport industry. First, Venture Philanthropy Partners (VPP) produced a report (McKinsey, 2001) in order to better understand capacity and capacity building in the field. In the resultant model, which drew upon 13 nonprofit organizational case studies, VPP proposed a seven-element framework composed of three high-level capacity elements (i.e., aspirations, strategy, organizational skills), three foundational capacity elements (i.e., human resources, systems and infrastructure, organizational structure), and one encompassing capacity element (i.e., culture). VPP suggested that capacity building cannot be conducted in isolation, but rather depends upon the alignment of all elements.

A second capacity framework emerged from research on the Canadian nonprofit sector in the early 2000s. Hall et al. (2003) generated a conceptual model of organizational capacity that emphasized three capacity areas: financial capacity, human resource capacity, and structural capacity, which includes relationship and network capacity, infrastructure and process capacity, and planning and development capacity. The model extends beyond organization-specific elements to also include external aspects that influence organizational capacity such as environmental constraints, access to resources and historical factors, and organizational outcomes of capacity-building practices. These practices include the provision of services, service of populations, production of goods, influence of policy, and advocacy.

There are similarities and differences between the VPP (McKinsey, 2001) and Hall et al. (2003) perspectives. Each view argues capacity involves organizational elements necessary to achieve a desired level of efficiency and effectiveness. Further, the variety of internal elements within each framework acknowledges organizational capacity is multi-dimensional in nature, and capacity building entails the creation and expansion of these elements (Hawe, Noort, King, & Jordens, 1997). The difference lies in which elements comprise capacity. VPP (McKinsey, 2001) and Hall et al. (2003) include human resources (HR) to highlight the collective competencies within an organization (see Chapter 13). Hall et al. incorporate skills and talent as part of HR, whereas VPP set organizational skills as a distinct capacity element. The VPP lists

strategy as a unique capacity element, whereas Hall et al. cover this in planning and development capacity. Finally, each model incorporates system and structure elements of capacity; VPP highlights governance and decision-making areas within this type of capacity, whereas Hall et al. include a more diverse collection of management areas that ranges from information technology to organizational networks.

There are two fundamental differences between the approaches. Hall et al. accentuate a “hard” area, financial capacity, as one of three key capacity elements. Their category, which refers to expenses, revenues, assets, and liabilities, is not identified in the VPP framework, although resource management is listed as a secondary component within the organizational skills capacity element. VPP (McKinsey, 2001) underscores a “soft” area, organizational culture, as the vital encompassing capacity element that “binds together the organization, including shared values and practices, behavior norms and most important, the organization’s orientation towards performance” (p. 34). Within the Hall et al. model, organizational culture is only mentioned within the infrastructure and process capacity element. A second difference between the two approaches relates to orientation. Hall et al. adopt an internal–external orientation that includes contextual inputs, capacity throughputs, and organizational outputs. Conversely, VPP (McKinsey, 2001) assumes an internal orientation whereby capacity throughputs comprise the “whole enterprise” (p. 34) and although contextual factors and achieving organizational outcomes are recognized, the input and output components are not specifically noted in the VPP capacity framework.

Finally, the VPP and Hall et al. approaches share one gap: the absence of a timeline. Organizations must understand how to incorporate daily capacity enhancements into persistent organizational practices in order to achieve ES goals. Alley and Negretto (1999) stated that capacity development involves the long term and seeks sustainable social and economic development. Mackay and Horton (2002) explained that the aim of capacity development was “to build self-reliant, learning organizations capable of successfully responding to challenges in order to maintain their relevance and performance levels under changing circumstances” (p. 1). Hence, capacity and capacity-building objectives must be long term in order to truly enable organizations to successfully manage change and achieve goals. The following section integrates sport and environmental sustainability literature with organizational capacity in order to discuss how each concept may inform the others.

Sport, environmental sustainability, and capacity

Doherty et al. (2014) reported there is an ever-increasing number of organizational capacity models particularly within the nonprofit sector, and research continues to develop ways to fit models to various contexts. Thus, the next step in this discussion is to explore how the different capacity perspectives noted in the previous section of this chapter relate to sport and environmental sustainability. For the purpose of this dialogue, three research areas are highlighted in order to examine the SES–capacity connection. In particular, the discussion will identify linkages between capacity elements and SES and sport mega-events, sport facilities, and sport marketing and corporate social responsibility practices.

The sport mega-event and environmental sustainability research is primarily situated within the international mega-event context (Collins & Flynn, 2008; Collins, Jones, & Munday, 2009). Dolles and Söderman (2010) examined the implementation of the Fédération Internationale de Football Association’s (FIFA) “Green Goal” initiative at the 2006 World Cup in Germany. A “Green Goal” objective is the “systematic and extensive reduction in harmful effects of the World Cup on the environment” (p. 590) and targets water, waste, and energy. For example,

one Green Goal target was to host the first climate-neutral finals in World Cup history and another set a 100,000-ton carbon offset agreement for the event. Research on the environmental sustainability of the Olympic Games found an incongruence between International Olympic Committee (IOC) ES programs and Olympic Organizing Committee green initiative implementation (Paquette, Stevens, & Mallen, 2011). In both these examples, the IOC and FIFA ES approaches were program based with specific pro-environment goals, which closely connects to the strategic capacity element (McKinsey, 2001) and structural capacity element, namely the planning and development capacity that includes organizational practices related to program design (Hall et al., 2003). In addition, the 2006 FIFA World Cup “Green Goal” initiative depended upon financial support from the German Federal Environment Foundation in order to implement ES strategies at the event. Such support is rooted within the financial capacity element because the cost to implement the Green Goal initiative was covered by obtaining the necessary revenue from an external funder and, therefore, based upon a financial rationale.

A second SES research area, sport venues, also reveals an intersection among sport, environmental sustainability, and capacity (Kellison & Kim, 2014; Sotiriadou & Hill, 2015). For example, Jin and her colleagues examined social norms, donor behavior, and green stadium initiatives (GSI) within the context of American collegiate athletics venues (Jin, Zhang, Pitts, Connaughton, Swisher, Holland, & Spengler, 2015). Kellison et al. (2015) examined the adoption of pro-environmental initiatives at North American professional and collegiate team sport facilities. They found lead facility designers harnessed pro-environmental social values in order to justify new green technology facility integration as “added value” to facility ownership and to implement new practices such as stadium recycling programs. In combination, these studies on ES and sport venues capture a number of capacity elements. Given the athletics donor-fundraiser objective to raise capital for ES-friendly facilities, the findings of Jin et al.’s (2015) research connects directly to the financial and network capacity elements. Further, the recognition that sport venue ownership seeks value from such ES action financial capacity is situated as a central element. The system and infrastructure capacity element is supported by the evidence of day-to-day facility management improvements and new technology adoptions noted in the SES literature.

Finally, studies on SES and marketing have examined antecedents of environmental behavior within professional sport teams and leagues (Babiak & Trendafilova, 2011; McCullough & Cunningham, 2010). Babiak and Trendafilova (2011) found two strategic drivers – a first predicated on market opportunities to generate profit, and a second centered upon legitimacy drivers, which imply a motivation to follow broader industry “greening” pressures – played a role in sport executive pro-environment decisions. In a subsequent study it was found that professional sport managers pursued environmental sustainability initiatives in order to avert legal recourse, save money, and build stronger relationships (Trendafilova, Babiak, & Heinze, 2013). The profit drivers noted earlier are a central aspect of the financial capacity element that seeks to generate profit and reduce liabilities and the strategic capacity element that focuses organizational practices upon the fulfillment of overarching organizational goals. The legitimacy driver recognizes environmental influences and applies to the relationship and network capacity element where connections to external stakeholders hold priority.

In order to explore how capacity and SES link, it is helpful to ask: How does a sport organization successfully embrace environmental sustainability and implement green management practices? According to the brief overview outlined earlier, it appears the answer is to build financial capacity, structural capacity, and to a lesser extent, strategic capacity. But is this the right approach to ensure long-term change? Environmental sustainability in sport remains a challenge, and certain domains, such as motorsport, remain resistant to the adoption of pro-environmental practices (Dingle, 2009).

The following section revisits the concept of capacity in order to discuss which capacity element(s) offer the greatest potential to build sport environmental sustainability in the future.

Towards a capacity–environmental sustainability–sport perspective

The overview of capacity models and elements provides a basis upon which to understand how organizations may better achieve their goals. The summary of three themes within SES literature offers insight about where, how, and why pro–environmental practices exist within the sport industry. Together, the two dialogues enable one to examine whether ES and sport practices are themselves sustainable. In order to reach a conclusion, the chapter will close by critiquing the types of capacity emphasized by ES initiatives in sport, proposing aspects of capacity that are critical if ES is to become more entrenched within the sport industry, and recommending future research to develop this line of inquiry.

Within organizational studies, the configurational approach explains organizational design according to archetypes (Miller & Friesen, 1980), or tightly coupled value–structure designs (Greenwood & Hinings, 1996). This perspective situates organizational capacity as an element intricately connected to the structural, systemic, and cultural components of an organization. For example, Tushman and Romanelli (1983) suggested capacity may be low or high depending upon the knowledge of the structures, systems, and processes that are being introduced or maintained within an organization. Pettigrew, Ferlie, and McKee (1992) believed that capacity runs broadly and deeply throughout an organization, which suggests significant interplay with various organizational properties. Hinings and Greenwood (1988) suggested that capacity relates to the capabilities and competencies of an organization. Specifically, they outline two capacity areas: skills and knowledge in transforming culture, and skills and knowledge in transforming structures, systems, and processes. Further, Hinings and Greenwood (1988) pointed out that the capabilities and competencies of an organization include leadership and knowledge components, as well as technical knowledge and skills.

The most critical assumption of the configurational view is the holistic as opposed to partist position. The need for congruence among all aspects of an organization underlines how organizations are understood and managed. The VPP report states managers “need to focus on building the capacity of their entire organization if they want to maximize their social impact” (McKinsey, 2001, p. 27). A second key aspect of capacity building that is very important for environmental sustainability in sport but that is not captured within either framework is the sense of time. The VPP report also noted three key lessons for capacity building of which the last, patience, recognizes that “almost everything about building capacity in nonprofits (and in for profit companies) takes longer and is more complicated than one would expect” (McKinsey, 2001, p. 15). Given this, organizational efforts to increase ES outcomes within sport reflect institutionalized change predicated upon the fundamental capacity cultural element that is central to the VPP framework. Only with this encompassing capacity element will the beliefs and values that underpin an organization be transformed and pro–environmental action be enabled.

Although the Hall et al. (2003) model identifies key capacity elements, the emphasis upon the whole rather than the parts is less prominent within their model compared to the VPP framework, and therefore a connection to sustainable management is less obvious. In their discussion of the transformation of management within the 21st century, Clarke and Clegg (2000) claimed “one of the most difficult paradigm shifts to make in business is to realize the goals of profit and growth are no longer sustainable as the ultimate objectives of enterprise” (p. 369). Hence, a capacity–building approach that enables SES is one that situates sustainability as a core value over the long term.

So, given the long-term, configurational view proposed here, how can sport and ES be better informed through the concepts of capacity and capacity building? The brief review of the three SES research areas and their connection to capacity revealed a focus upon particular capacity elements. The prominence of the financial capacity element infers a market pressure drives many of the ES outcomes within the sport industry. Will such an approach last? The answer suggested here is not likely. A top-down, reactive approach inappropriately frames capacity as building solitary parts of the organization. For example, the FIFA “Green Goal” initiative set greening practices within a specific program executed by the event host organization. When discussing capacity building, the VPP report identified the importance of an integrated approach among the seven capacity elements, “but it will never achieve institutional alignment unless its organizational design supports not only systems and human resources, but also its aspirations, strategies, and skills” (McKinsey, 2001, p. 39).

If capacity building is to effectively enable ES in sport, the managerial paradigm must shift from a technocentric hierarchical approach to a sustaincentric holarchical approach (Clarke & Clegg, 2000). UNDP (2002a) has called for a more effective, collaborative, and integrated approach to capacity building. If such an approach is needed at the global and national levels, then it is also necessary at a sport organizational level within commercial, nonprofit, and public sectors. UNDP capacity-building programs (UNDP, 2002b) build local empowerment, but in a highly institutionalized and capitalized context, such action occurs at the margin with little impact upon central organizational beliefs and values. Capacity-building efforts that address fundamental logics within a sport organization, sector, or industry rather than respond to regulatory or market pressures offer far greater potential for significant and progressive ES-based change.

A second body of management studies literature makes the capacity–organizational development connection more explicit. Warzynski (2005) suggests tensions exist between strategies to improve economic performance and build organizational capacity and contends these are best managed through an evolutionary approach to organizational development. In addition, Judge and Elenkov (2005) argue for a positive relation between organizational capacity for change and performance. Finally, Kerber and Buono (2005) state “the greater an organization’s change capacity, the greater the organizations ability to embrace guided change” (p. 33) and in so doing, place capacity as an important determinant of effective organizational transformation. Collectively, these works provide valuable insight into how capacity building affects organizational development and, further, how it enables ES-based organizational change within sport.

Movement toward a “model of organizing” (Bunderson, Lofstrom, & Van De Ven, 2000) view of capacity is beginning to emerge within the sport and ES literature. For example, McCullough and Cunningham (2010) suggested functional, political, and social pressures positively influence an organization to adopt green management techniques. Although their utilization of institutional theory projects a deterministic view to explain why ES practices emerge within sport organizations, it sets an opportunity for the counter position to emerge. Specifically, a “way of managing” orientation of capacity is premised upon internal as opposed to external drivers of change and ensuring the cultural capacity element identified in the VPP framework is positioned as the foundational component for successful capacity-building SES initiatives.

Even though Kellison et al. (2015) found the pressure from the external organizational context drove pro-environmental changes in stadium design, they still called for further research on decision-making within the organization in order to better understand the stadium greening trend. In their examination of the diffusion of pro-environment innovation in sport, McCullough et al. (2015) noted that in general, “environmental issues are more integrated with broader strategic planning” (p. 15), yet such a claim remains coupled to financial capacity through an emphasis upon cost reduction and revenue generation that reinforces an economic

“bottom line.” However, they continue to explain that the more advanced phase of ES in sport, termed the “third wave,” is based upon a diffusion of “highly normative” ES practices through organizational learning. This indicates that a more permanent shift towards ES management in sport is predicated upon what Hinings and Greenwood (1988) refer to as the interpretive scheme underlying organizational design. Successful capacity-building strategies must target this area, or cultural element, of an organization.

McCullough and Cunningham (2010) argued that as the green movement “becomes the standard rather than a luxury, there is a necessity to understand causation” (p. 359) and utilized institutional theory to explain the development of greening practices in sport. To move further towards a green standard in sport, capacity building must address the cultural capacity element in order to shift towards pro-environmental values. In institutional theory terms, this claim suggests the drivers of ES-based change are due to voluntaristic as opposed to deterministic factors (Granovetter, 1985). The tension between internal and external pressures for change is evident in the debate of how best to advance SES. Preuss (2013) supported sport governing bodies setting requirements and compliance standards for sport event hosts; however, this approach is less about fundamental capacity improvements within sport organizations and more about regulation and coercive pressure upon sport organizations. The same is noted in Trendafilova et al.’s (2013) explanation of ES in North American professional sport leagues, where they acknowledge sport entities experience institutional pressures through actors such as the sport media and in response seek legitimacy through the pursuit of green initiatives. Again, this represents an externally driven or deterministic rather than internally driven voluntaristic sustainable management approach. A long-term capacity-SES perspective is most likely to generate change in the latter context.

Finally, Trendafilova et al. (2014) recommended that sport managers address environmental issues from a strategic planning approach. However, they also recognized the “adoption of [ES] activities provides sports teams and venues the opportunity to save money by shifting to more efficient and environmentally friendly operations” (p. 13). So, on one hand the call for the strategy capacity element aligns with the holistic capacity view proposed here because strategic planning is somewhat connected to underlying organizational values and cultural capacity. But on the other hand, the fundamental motivation to generate profit and build the financial capacity element, which the position advanced in this chapter identifies as a shortcoming to pro-environmental practices in sport, is acknowledged.

Future research and conclusion

There are many opportunities to build upon the burgeoning scholarship on environmental sustainability and sport. Integrating capacity and e-sustainability concepts is a challenging but interesting conceptual endeavor. Ebrahim (2003) noted that capacity-building activities may not be effective and in order to reduce the risk of misplaced financial and human resources, it is important to ensure the appropriate capacities are enhanced and long-lasting organizational improvement is accomplished. Future research could extend upon the very cursory capacity-SES research area comparison exercise summarized in this chapter and examine which capacity elements are most evident within ES initiatives across all segments of the sport industry. Inquiry into factors that initiate and enable ES-based change within sport organizations may offer insight about which capacity elements generate the greatest potential, or more importantly, the greatest success, for long-term sustainable management in sport. Finally, clarity about the relation between capacity elements and underlying organizational logics or beliefs would allow practitioners to better understand the impact of internal compared to external drivers of change,

and in turn, effectively build capacity accordingly. Academics are encouraged to further explore the interplay between deterministic and voluntaristic views of ES-based change in order to theoretically extend our understanding of SES phenomena.

The position argued in this chapter advocates a holistic as opposed to partist view of organizational capacity and capacity building and argues for a conceptually sound perspective in which to better understand capacity, change, and environmental sustainability in sport. As Clarke and Clegg (2000) stated, “sustainability is the key strategic imperative of the future” (p. 428). Although ES change in sport is evident, the slow pace of advancement in the field indicates the current state “represents the beginning of a long journey” (Sotiriadou & Hill, 2015, p. 7). Devane (2007) claimed that “we need to stop thinking about sustainability at the end of a change effort and move it to its rightful place for full, formal consideration – at the *start* of a change effort” (emphasis in original) (p. 59). This will require a reorientation from large-scale organizational change to large-scale sustainable organizational change.

References

- Alley, K., & Negretto, G. (1999). *Literature review: Definitions of capacity building and implications for monitoring and evaluation*. New York, NY: UNICEF, Division of Evaluation, Policy and Planning.
- Babiak, K., & Trendafilova, S. (2011). CSR and environmental responsibility: Motives and pressures to adopt green management practices. *Corporate Social Responsibility and Environmental Management*, 18, 11–24.
- Backer, T. E. (2001). Strengthening nonprofits: Foundation initiatives for nonprofit organizations. In C. De Vita & C. Fleming (Eds.), *Building capacity in nonprofit organizations* (pp. 33–84). Retrieved from <http://research.urban.org/>
- Bunderson, J. S., Lofstrom, S., & Van De Ven, A. (2000). Conceptualizing and measuring professional and administrative models of organizing. *Organizational Research Methods*, 3, 366–391.
- Cairns, B., Harris, M., & Young, P. (2005). Building the capacity of the voluntary nonprofit sector: Challenge of theory and practice. *International Journal of Public Administration*, 28, 869–885.
- Clarke, T., & Clegg, S. (2000). *Changing paradigms: The transformation of management knowledge for the 21st century*. London, UK: HarperCollins Business.
- Collins, A., & Flynn, A. (2008). Measuring the environmental sustainability of a major sporting event: A case study of the FA Final Cup. *Tourism Economics*, 14, 751–768.
- Collins, A., Jones, C., & Munday, M. (2009). Assessing the environmental impacts of mega sporting events: Two options. *Tourism Management*, 30, 828–837.
- Devane, T. (2007). Sustainability of results. In P. Holman, T. Devane, & S. Cady (Eds.), *The change handbook: The definitive resource on today's best methods for engaging whole systems* (pp. 59–70). San Francisco, CA: Berrett-Koehler Publishers, Inc.
- Dingle, G. (2009). Sustaining the race: A review of literature pertaining to the environmental sustainability of motorsport. *International Journal of Sports Marketing and Management*, 11, 80–96.
- Doherty, A., Misener, K., & Cuskely, G. (2014). Toward a multidimensional framework of capacity within community sport clubs. *Nonprofit and Voluntary Sector Quarterly*, 43(25), 124S–142S.
- Dolles, H., & Söderman, S. (2010). Addressing ecology and sustainability in mega-sporting events: The 2006 football World Cup in Germany. *Journal of Management and Organization*, 16, 587–600.
- Ebrahim, A. (2003). *Building analytical and adaptive capacity: Lessons from northern and southern NGOs*. Paper presented at the International Research Conference, Denver, CO.
- Granovetter, M. (1985). Economic action and social constraints: The problem of embeddedness. *American Journal of Sociology*, 91, 481–510.
- Greenwood, R., & Hinings, C. R. (1996). Understanding radical organizational change: Bringing together the old and new institutionalism. *Academy of Management Review*, 21, 1022–1054.
- Hall, M. H., Andrukow, A., Barr, C., Brock, K., de Wit, M., Embuldniya, D., . . . Vaillancourt, Y. (2003). *The capacity to serve: A qualitative study of the challenges facing Canada's nonprofit and voluntary organizations*. Toronto, ON: Canadian Centre for Philanthropy.

- Hawe, P., Noort, M., King, L., & Jordens, C. (1997). Multiplying health gains: The critical role of capacity-building within health promotion programs. *Health Policy, 39*, 29–42.
- Hinings, C. R., & Greenwood, R. (1988). *The dynamics of strategic change*. Oxford, UK: Basil Blackwood.
- Jin, L., Zhang, J., Pitts, B., Connaughton, D., Swisher, M., Holland, S., & Spengler, J. (2015). Factors associated with an athletics donor's intention. *International Journal of Event Management Research, 10*(1), 37–62.
- Judge, W., & Elenkov, D. (2005). Organizational capacity for change and environmental performance: An empirical assessment of Bulgarian firms. *Journal of Business Research, 58*, 893–901.
- Kellison, T., & Kim, Y. (2014). Marketing pro-environmental venues in professional sport: Planting seeds of change among existing and prospective consumers. *Journal of Sport Management, 28*, 34–48.
- Kellison, T., Trendafilova, S., & McCullough, B. (2015). Considering the social impact of sustainable stadium design. *International Journal of Event Management Research, 10*(1), 63–83.
- Kerber, K., & Buono, A. (2005). Rethinking organizational change: Rethinking the challenge of change management. *Organizational Development Journal, 23*(3), 23–38.
- Mackay, R., & Horton, D. (2002). *Capacity development in planning, monitoring, and evaluation: Results of an evaluation*. The Hague, Netherlands: International Service for National Agricultural Research.
- McCullough, B., & Cunningham, G. B. (2010). A conceptual model to understand the impetus to engage in and the expected organizational outcomes of green initiatives. *Quest, 62*, 348–363.
- McCullough, B., Pfahl, M., & Nguyen, S. (2016). The green waves of environmental sustainability in sport. *Sport in Society, 19*, 1040–1065.
- McKinsey. (2001). *Effective capacity building in nonprofit organizations*. Venture Philanthropy Partners. Retrieved from www.vpppartners.org/learning/reports/capacity/assessment.pdf
- Millar, P., & Doherty, A. (2016). Capacity building in nonprofit sport organizations: Development of a process model. *Sport Management Review, 19*, 365–377.
- Miller, D., & Friesen, P. (1980). Momentum and revolution in organizational adaptation. *Academy of Management Journal, 23*, 591–614.
- Misener, K., & Doherty, A. (2009). A case study of organizational capacity in nonprofit community sport. *Journal of Sport Management, 23*, 457–482.
- Misener, K., & Doherty, A. (2013). Understanding capacity through the processes and outcomes of inter-organizational relationships in nonprofit community sport organizations. *Sport Management Review, 16*, 135–147.
- Mizrahi, Y. (2004). *Capacity enhancement indicators: Review of the literature*. Washington, DC: The International Bank for Reconstruction and Development/The World Bank.
- National Hockey League. (2014). *2014 NHL sustainability report*. Retrieved from <http://ice.nhl.com/green/report/#aboutReport>
- National Resources Defense Council. (2012). *Game changer: How the sports industry is saving the environment*. Retrieved from www.nrdc.org/sites/default/files/Game-Changer-report.pdf
- Paquette, J., Stevens, J., & Mullen, C. (2011). The interpretation of environmental sustainability by the International Olympic Committee and Organizing Committees of the Olympic Games from 1994 to 2008. *Sport and Society, 14*, 355–369.
- Pettigrew, A., Ferlie, E., & McKee, L. (1992). *Shaping strategic change: Making change in large organizations – the case of the National Health Service*. London, UK: Sage Publications.
- Pratt, B. (2002, December). Volunteerism and capacity development. *Development Policy Journal, 95*–117.
- Preuss, H. (2013). The contribution of the FIFA World Cup and the Olympic Games to green economy. *Sustainability, 5*, 3581–3600.
- Schacter, M. (2000). *“Capacity building”: A new way of doing business for development assistance organizations*. Ottawa, ON: Institute on Governance.
- Sharpe, E. (2006). Resources at the grassroots of recreation: Organizational capacity and quality of experience in a community sport organization. *Leisure Sciences, 28*, 385–401.
- Sotiriadou, P., & Hill, B. (2015). Raising environmental responsibility and sustainability for sport events: A systematic review. *International Journal of Event Management Research, 10*(1), 1–11.
- Trendafilova, S., Babiak, K., & Heinze, K. (2013). Corporate social responsibility and environmental sustainability: Why professional sport is greening the playing field. *Sport Management Review, 16*, 298–313.

- Trendafilova, S., McCullough, B., Pfahl, M., Nguyen, S., Casper, J., & Picariello, M. (2014). Environmental sustainability in sport: Current state and future trends. *Global Journal on Advances on Pure and Applied Sciences*, 13, 9–14.
- Tushman, M., & Romanelli, E. (1983). Uncertainty, social location, and influence in decision making: A sociometric analysis. *Management Science*, 29, 12–23.
- United Nations Development Programme. (1997). *General guidelines for capacity assessment and development*. Retrieved from <http://magnet.undp.org/cdrbgenguid.htm>
- United Nations Development Programme. (2002a). *UN guidelines for developing transition strategies for capacity building projects in mine-affected countries*. New York, NY: United Nations.
- United National Development Programme. (2002b). *UNEP's capacity building activities on environment, trade and development. UNEP briefs on economics, trade and sustainable development: Information and policy tools from the United Nations Environment Programme*. Retrieved from www.unep.org/
- Warzynski, C. (2005). The evolution of organizational development at Cornell University: Strategies for improving performance and building capacity. *Advances in Developing Human Resources*, 7, 338–350.

8

THE OLYMPICS

Institutionalization and standardization of sustainability

Jon Helge Lesjø and Erlend Aas Gulbrandsen

In June 1992, the city of Rio de Janeiro, Brazil, hosted the UN Conference on Environment and Development. In August 2016, the world's eyes were again on Brazil and Rio, this time as host of the XXXI Olympiad, the first Olympic and Paralympic Games in South America. The Earth Summit on environment cleared the path for the Agenda 21, a UN non-binding action plan for governments and nongovernmental organizations (NGOs) around the world for sustainable development. Its ambitions were to stimulate actions on several levels toward protecting the environment, fighting poverty, and mobilizing groups in civil society toward the UN's 21st-century development goals.

As an international NGO (INGO), the International Olympic Committee (IOC) was affected by the request from Agenda 21. At the Barcelona Olympic Games in 1992, the IOC therefore encouraged all National Olympic Committees (NOCs) to sign the Earth Pledge to make the planet a better home for future generations. Two years after the Rio Summit, at the Centennial Congress in Paris in July 1994, the IOC declared the environment to be an important part of Olympism. The Congress defined the environment as the third pillar of Olympism, alongside sport and culture (Cantelon & Letters, 2000). Establishing a Sport and Environment Commission in the Olympic Movement followed in 1995, along with biannual World Conferences on Sport and Environment. The IOC also provided mechanisms influencing the NOCs in more than 200 countries to implement an environmental policy fitting into the UN's work for sustainable development.

Within a timespan of about 20 years, the concept of sustainability and attention to environmental issues has become institutionalized within the Olympic Movement (OM). The Olympic Charter, the main regulating document for the IOC and its network of organizational partners, was altered already in 1996 with references to the environment. In its edition from 2016, the charter states that the mission and roles of the IOC are “to encourage and support a responsible concern for environmental issues, to promote sustainable development in sport and to require that the Olympic Games are held accordingly” (IOC, 2016, ch. 2.13).

The formulations on sustainable development in the charter were followed with articulation of the importance of a positive legacy for the host cities and the home countries. After legacy was implemented into the Olympic vocabulary in the middle of the 1990s, sustainability and legacy have more or less operated hand-in-hand. As discussed in this chapter, institutions are governed by rules, both formal and informal. The IOC is a rule setter affecting the other

organizations in the OM by deciding the rules of the game in the field – not only who is going to be host of Olympic events, but on which terms as well. A special form of rules, not mandatory ones, are standards (Brunsson & Jacobsson, 2002), and as discussed later, sustainability has become a prominent standard in the operations and management of the Olympic Games.

Institutionalization/standardization in fields

We can look upon the Olympic affairs as taking place within a social field or several interrelated fields. The literature on social and organizational fields is extensive and follows some common traits amid its differences (Bourdieu, 1977; DiMaggio & Powell, 1983; Fligstein & McAdam, 2012). Field theory focuses on groups of actors or organizations gathered around some common issues where something is at stake. The emergence, stabilization, and transformations of such common arenas for actions are at the center of scholarly attention regarding organizations, markets, social movements, and politics.

Stabilization of fields means institutionalization where norms and habits are established as rules of the game. That means that there are formal and informal rules to follow; additionally, there is a certain form of institutional pressure upon the actors to operate in accordance with the rules. Fields will typically vary across time between periods of harmony and conflict, driven by the sometimes competing interests of established actors and outsiders. The distribution of power among actors is often uneven, and the skills and ability to cooperate and generate coalitions are important resources for staying in, as well as challenging power positions. Conflicts and contested affairs may bring new challenging groups into the game as dominant players, or at least provoke some changes in the rules of the game. Every field will have some important connections to its outside environment and be dependent on legitimacy from this environment. External and internal governance units are important for rule setting and compliance with field rules. There may be a division of labor where internal units are responsible for functioning of rules and the external state or state-like structures are responsible for the overall jurisdiction.

Brunsson and Jacobsson (2002) see standards and standardization as forms of regulation and are, therefore, central societal phenomena. As they note, to regulate is to “create and propagate rules” (p. 10). Standards are also rules, but of a voluntary kind: they may serve as recommendations to certain forms of actions and precautions, which may be highly concrete to specify a certain behavior or generally accepted way of doing things. For instance, International Organization for Standards (ISO) standards are well-known criteria for recognized rules and guidelines in a certain area of operations (see Chapter 16 for more details).

The process of institutionalization implies the existence of mechanisms for producing maintenance effects on organizations and institutions. Three such mechanisms are identified in the literature: one is regulatory and coercive, implying incentives and possible sanctions; another is mainly normative, appealing to values and identity; and a third is cultural-cognitive, where structures and practices are taken for granted with the spread of ideas through objectification. Important mechanisms for diffusing structures and ideas in and between fields include media, networks and intermediary bodies, routines, and artifacts (Scott, 2008).

The OM has been viewed as “a field within fields,” showing that certain forms of appropriate behavior are institutionalized through rule making and standardization. The OM, under the supremacy of the IOC, consists of a network of organizations within the OM and partners, corporate and voluntary, from other fields. The rules of the game are structured around certain phases in the process of staging the Olympics, including the bidding phase, the planning period, the event production, and a post-game period. A signed contract binds the selected host to the rules of Olympism and preferred behavior set by the field’s incumbents. The legacy thinking

from the 1990s institutionalized the idea that candidates who become host cities should take all these phases, not least the last one, into consideration from the very start of their Olympic project.

In 1994, the IOC entered into a partnership with fields outside the OM, especially the UN and the United Nations Environmental Programme (UNEP). Environmental issues had moved into the “political mainstream,” and such cooperation with the UN would be important for the OM’s own legitimacy. Additionally, it represented a strategic alliance that promoted work on environmental sustainability. The IOC has, however, not only an identity as a leader of a small “movement”; through growth and successful economic maneuvers, it has developed into a large transnational organization. Much like a large transnational corporation, the IOC’s identity as a corporation or firm makes it reasonable to identify sustainability strategies from concepts in the business sector. Therefore, the literature on corporate social responsibility and corporate sustainability serve as an appropriate guide, as discussed further next.

Corporate sustainability as inspiration

The inclusion of sustainability in the OM can be seen as part of a wider trend. Corporate sustainability efforts (CSE) – broadly, efforts aimed at increasing non-financial performance – have been a part of business practices for a long time, and such efforts can be traced back more than 3,500 years (Husted, 2015). This long history in business might well have served as an inspiration for the OM in taking up sustainability.

The more modern form of the phenomenon appears to have its roots in the practices of 19th-century businesses and business owners (Husted, 2015). Further, in recent years, there seems to be a global push toward even more pronounced CSE in private organizations. Midttun (2013) argues that corporate social responsibility (CSR) constitutes a global megatrend, and that both writing on and organizational adoption of CSR have reached unprecedented heights in the period from the 1990s to the present.

Similar to the description of the CSR megatrend, Matten and Moon (2008) point to a growing trend among private business organizations in Europe in recent years when it comes to engaging in “explicit CSR.” In the context of this chapter, explicit CSR translates to CSE that is adopted and announced in an explicit fashion vis-à-vis the organization’s environment. Matten and Moon cite isomorphic pressures stemming from organizations’ national business environments as the primary source of this trend. The practices in question are adopted because they are considered legitimate. The authors give three types of such isomorphic pressures affecting the individual organization: *coercive isomorphism* influenced by externally codified rules, norms, or laws; *mimetic processes* that influence managers and business owners attracted to “best practices” in other businesses; and *normative pressures* set by professional or educational authorities on what is considered legitimate.

Matten and Moon (2008) identify several changes in the political landscape in Europe between the 1960s and the present. Widespread deregulation is argued to provide *coercive isomorphism* through challenging the traditional European corporatism, and thus providing justification for CSE. Further, national and EU policies geared towards increasing CSE in firms – in order to stimulate firms to take more responsibility for societal problems – are cited as sources of *mimetic processes* and *normative pressures*. Finally, the United States has been ahead of Europe in the adoption of “explicit CSR” and could prove to be another source of *mimetic processes* in European firms.

Related to this explanation of the spread of CSE is the steadily growing literature and discourse on “the business case” for CSE, namely that CSE can increase the profitability of each

individual organization engaging in CSE. Husted (2015) found evidence of business practitioners arguing this point as early as the early 1800s and states that the “CSR pays” argument was ever-present in the 19th and 20th centuries. A score of empirical studies on this matter has been conducted over the past several years with varied results, but a meta-analysis by Orlitzky, Schmidt, and Rynes (2003) found a clear positive causal link between CSE and financial performance.

However, although the practice of CSE may be long standing, the concepts related to CSE practices are younger. The theoretical discourse on CSR dates back to 1953 and the publication of Howard Bowen’s seminal book *Social Responsibilities of the Businessman* (although early books on the same subject were published in the 1930s and 1940s; Carroll, 1999). Tackling the corporate sustainability concept in particular, there is little consensus on what actually constitutes corporate sustainability, not least in the sense of an objective standard for sustainable business practices. Although researchers and practitioners generally have accepted the definition of sustainable development (see World Commission on Environment and Development, 1987) as the basis for environmental sustainability, this seems to be as far as the agreement goes. Among practitioners (and several scholars), the triple bottom line concept (Elkington, 1997) – simultaneous company performance along the social, environmental, and financial dimensions – is also accepted as an operationalization of the sustainability concept. This minimal level of common understanding leaves considerable latitude for different interpretations when it comes to how sustainability should be quantified and measured at both the societal and organizational levels.

The result of this latitude seems to be what some authors have labeled “strategic ambiguity” when it comes to CSE (Guthey & Morsing, 2013). Critiques of this view can be found throughout the literature, and critics typically adhere to what we term the *greenwashing position*. Proponents of this position hold that any leeway given to private organizations in administering and communicating their CSE will lead to widespread miscommunication and deliberate misuse of public trust. This position is longstanding in the CS literature (e.g., Greer & Bruno, 1996; Mintzberg, 1983), and those who subscribe to it draw a sharp distinction between “talk,” understood as impression management through extensive marketing of CSE, and “walk,” understood as substantive implementation of CSE (Wickert, Scherer, & Spence, 2016). Furthermore, proponents of this position harbor a deep mistrust in impression management and communication of CSE, aligning it with “smoke and mirrors” tactics (Prasad & Holzinger, 2013). Many proponents of this view criticize the fact that such tactics might deter or reduce real engagement in bringing about increased social and environmental performance in organizations – hence moving the practice of CS communication from just a nuisance to a real harm (e.g., Roberts, 2003). In general, proponents of the greenwashing position find the potential for and practice of decoupling communication and action problematic (Weaver, Treviño, & Cochran, 1999).

The greenwashing proposition can be contrasted with the proponents of the “business case” referred to earlier. Proponents of the “business case” position hold not only that CSE can be profitable, but that there is no real conflict between the goal of profitability and the goals of social and environmental sustainability (Porter & Kramer, 2011).

The dialectic tension between the greenwashing position and the “business case” position could be viewed as a force pushing CSE adoption forward. This is in many ways what is being done in the third position on CSE, the *aspirational position*. This position holds that a degree of leeway and ambiguity among private companies might be not just unproblematic, but even useful, when working with CSE. Haack, Schoeneborn, and Wickert (2012) used institutional theory on the adoption of CSE practices in banks and found that through “talking the talk,” organizations found themselves caught in moral entrapment and were forced to adapt their practices to match their rhetoric. Along similar lines, Christensen, Morsing, and Thyssen (2013) discussed the fact that a gap between talk and efforts *could* be an important tool for increasing adoption

of CSE: Overly optimistic and therefore partially false CS communication can be viewed as *aspirational talk*, something that the organization in question strives to reach, hence increasing its efforts. Although the authors acknowledge the possibility that organizational hypocrisy in the form of aspirational talk might be used to deceive, they also argue that without such talk, the adoption and ambition of CSE are likely to be comparatively smaller than in the presence of such talk (Christensen et al., 2013).

With regard to the road ahead, authors in several conceptual contributions have argued in different ways that integration of CSE into the core of an organization's practices is the desirable end goal when it comes to CSE, and that this is the main way through which the individual organization can attain financial or other strategic gains from CSE. Examples of this include Zadek's (2007) three stages of corporate citizenship and the young but rapidly growing literature on business models for sustainability (Jørgensen & Pedersen, 2015; Schaltegger, Hansen, & Lüdeke-Freund, 2016; Stubbs & Cocklin, 2008).

Diffusion: from upcoming ideas to established standards

The Winter Olympic and Paralympic Games have been ahead of their summer counterpart with regard to the focus on environmental issues (Chappelet, 2008). Of course, this has much to do with the sites' locations in more sensitive mountain and alpine areas, and smaller cities, where the construction of new infrastructure, as well as new venues, have long been controversial public issues. The first environmental controversies over land use occurred during the planning for the Winter Games in Lake Placid in the 1930s. The 1970s was a period of general ecological awareness, but the breakthrough for environmental issues came first in the 1990s with the Winter Games in Albertville and Lillehammer.

Some of the Albertville venues were highly controversial, and a protest march took place before the opening ceremony. This protest drew the attention of IOC President Juan Antonio Samaranch and the IOC leadership and demonstrated that environmental issues could threaten the Games. A few years earlier, Lillehammer's Games involved a promise of hosting an environmentally friendly event to the IOC. In a speech to the IOC that finalized the Lillehammer campaign, Prime Minister Gro Harlem Brundtland said that her country wanted to make the event a showcase for environmental sustainability. Brundtland drew from her prestige as the former leader of the World Commission on Environment and Development and its introduction of the concept sustainable development.

The Lillehammer Olympic Organizing Committee (LOOC) did not implement these plans from their own initiative, however. The fact is that grassroots activists were the force, which most energetically put the environmental issue on the agenda. After the IOC's decision in September 1988 to let Lillehammer host the Games, the Norwegian Friends of the Earth (Naturvernforbundet) organized Project Environment-Friendly Olympics (PEFO) in order to influence the planning process (Lesjø, 2000). The IOC leadership received this group sympathetically, and PEFO eventually collaborated with the LOOC and the local government. This alliance was the basis of a strong, important symbol of environmental commitment connected to the '94 Winter Games.

A memo from the Lillehammer-based PEFO (1992) to the IOC proposing a new agenda turned out to be important. Acknowledging environment as the third dimension and the creation of an IOC's Sport and Environment Commission were important starting points, as was the IOC's cooperation with the UN and their work on environment. The IOC in 1999 set up its own Agenda 21 to help their partners in the Olympic Movement accommodate the UN Agenda 21 and to adapt the thinking of sustainability to the area of sport.

Cantelon and Letters (2000) analyzed the formation of an environmental policy as an example of the dynamic of the global–local disjunction. Normally it is difficult for locals to set the agenda in the process of globalization, but they analyzed this case as an excellent example of the blend between the local and the global. They concluded that it was the local initiatives “negatively at Albertville, positively at Lillehammer, which resulted in the IOC environmental policy” (p. 306). The global–local relation is highly relevant also in studying how the concept and practice of sustainability were further institutionalized in the Olympic fields.

Rules and regulation succeeded these first initiatives and contributed to what is today a situation where specific attention to sustainability has become standard operational procedure. In addition to the charter, which contributes to the process of institutionalization, other regulations can be found in the host city contract, knowledge transfer systems guidelines, reports and evaluations, and impact studies. As a practical tool, the IOC’s Agenda 21 developed into a manual for implementing the principles of sustainability into different geographical and local settings.

Examples: from Sydney to London

The IOC awarded the 2000 Games to the city of Sydney in 1993. Sydney has, even if some of the outcomes could be contested, been considered a pioneer in integrating sustainability in its developmental work (Chernushenko, 1994, Chernushenko et al., 2002). Vital to the strategy was the cooperation from the beginning of the bid process with environmental groups such as Greenpeace. They were key actors developing the environmental guidelines for the Summer Games, which was important for the bid’s success. It consisted of more than 100 commitments over five main areas. The most visible proof of the environmental profile was the big clean-up of the Homebush Bay area, transforming a site used for uncontrolled industrial dumping for years into a new Olympic Park and a future recreational area. An Olympic Boulevard linked most of the venues together in what should be a green post-industrial space (Cashman, 2015). Important as well was the solar powered athletic village using a range of recycled materials and different environmental technologies.

Part of Sydney’s sustainable strategy was setting environmental standards for all tenders, encouraging environmental innovation, and developing forums and cooperation with governments and voluntary organizations. The organizers gave priority to cooperation with green groups, especially Greenpeace Australia and Green Games Watch 2000 (an assembly of green groups established as a watchdog coalition during the Games). The Olympic Coordination Authority developed important tools to govern the process of preparations like the Environmental Management System to secure compliance with the ISO standard 14001.

After the Sydney Games, the IOC developed the Olympic Games Knowledge Management (OGKM) program to transfer experiences and best practices to bidders and host cities’ organizing committees. By design, the transfer of lessons and recommendations from one edition of the Games to the next should then be much easier.

From early on, the 2006 Olympic Winter Games in Torino developed a Strategic Environmental Assessment (SEA) together with the Ministry of Environment and the Regional Government of Piedmont. The strategic plan was followed by several operational plans like a Water Plan and Landscape Plan, as well as a system of Environmental Monitoring. The latter was applied to all the 46 municipalities in the Olympic regions, where changes to the local ecosystem were monitored.

The Organizing Committee for the 2006 Olympic Games in Turin (TOROC) developed a prototype and was the first organization in the sport sector to implement the EU

Eco-Management and Audit Scheme (EMAS; TOROC, 2006). They also organized their EMS system to comply with the ISO 14001:1996 standard for the management of their sustainability strategy through all the phases of the project. Torino further developed the HECTOR program (HERitage Climate TORino), recognizing the need to pay increased attention to climate change, which could be vital to the future of winter sports. The program therefore implemented projects involving increased reforestation, energy efficiency, and the use of renewable energy. The Torino Games further worked out a joint memorandum with the UNEP to implement their environmental projects, and they were the first host city to test out new impact studies.

Later on, the IOC insisted on conducting such studies to achieve a better picture of the impact of the Games. The IOC considers accumulation of knowledge about impact and legacy to be important, and therefore contributed to establish a system of impact studies, the so-called Olympic Games Impact (OGI) Study, covering a period as long as 12 years. The guide for the impact studies lists three main thematic topics for investigation, each with specific focus areas, which should be given standardized scores. The main topics, reflective of the three aspects of the triple bottom line, are environmental, socio-cultural, and economic.

The city of Vancouver was the host of the 2010 Winter Olympic Games. In their sustainability report, the Vancouver Organizing Committee for the 2010 Olympic and Paralympic Winter Games (VANOC) defined sustainability as “managing the social, economic and environmental impacts and opportunities of our Games to produce lasting benefits, locally and globally” (VANOC, 2010, p. 2). As a central tool in their work, they developed a Sustainability Scorecard focusing on five main topics: Accountability, Environmental Stewardship and Impact Reduction, Social Inclusiveness and Responsibility, Aboriginal Participation and Collaboration, and Sport and Sustainable Living. Each topic had several key performance measures at fixed times during the different phases of the project. VANOC assisted in developing the Canadian Standard Association’s Z2010 Sustainable Event Management Standard, which was a new standard for event management in Canada. An independent firm, PricewaterhouseCoopers (PwC), evaluated VANOC’s implementation of the Sustainability Scorecard in accordance with the International Standard on Assurance Engagement (ISAE).

London 2012 worked in its bid process with both sustainable development and legacy connected to the Games (Gold & Gold, 2015). The transformation of land in East London into the new Olympic Park (Queen Elizabeth Olympic Park after 2013) was an important part of their strategy. Well known was also integration of the “One Planet Living” agenda (developed by the World Wildlife Fund) in the strategy. They also had five theme priorities in their plans (i.e., climate change, waste, biodiversity, inclusion, and healthy living) and three important elements in their implementations: a sustainability management system, independent assurance, and sustainability reporting (London Organising Committee of the Olympic and Paralympic Games, 2012). LOCOG’s sustainability team gave important input toward development of the ISO 20121, the first internationally recognized Event Sustainability Standard and launched in June 2012. LOCOG and its sustainability team worked closely in cooperation with their sponsors and private sector partners.

Regulation: the formal contract

The host city contract is a juridical agreement between the main parties consisting of both principles (the general responsibilities and financial issues) and operational requirements (detailed on key issues in planning and staging the Olympic and Paralympic Games). In the edition from 2015 (for the 2024 selection), sustainability and legacy are featured heavily in the requirements.

These concepts are “closely related,” and sustainability is seen as a wide-ranging theme with vital elements in planning and hosting the Games. It is emphasized that “sustainability needs to be strongly bound into the ethos and organisational structure of all bodies responsible for the delivery of the Games” (IOC, 2015, p. 167). The host city contract also considers legacy as a strategic theme for economic and social development as well as in the production of reputation for the host city and nation. For the event organization, a sustainability management system has to be set up. To deliver a sustainable Games, it is important to have the system confirmed by independent sources three years before the Games, and the system should comply with the ISO 20121 standard.

The organizers should also be responsible for preparing sustainability reports prior to the Games as well as in a post-Games report, both of which should be conducted according to specific guidelines. Finally, yet importantly, the contract points to the need for conducting an OGI Study following the guide for impact studies.

Greening the games or greenwashing the games?

Global-local relations have been a central element in diffusion of the standards for sustainability in the Olympic fields. Partnerships with the UNEP, green groups in the civil society, local governments, and business are institutionalized as established practice in the field. Since 1995, the UNEP cooperated in hosting the IOC World Conference on Sport and Environment biannually up to the 10th in 2014. In 2007, the IOC Sport and Environment Commission received the Champions of Earth Award from UNEP (Emese & Pandev, 2010). With Olympic Agenda 2020, the IOC is committed to the UN’s post-2015 Development Agenda with its Sustainable Development Goals, where sport is recognized as having a role in enabling sustainable development.

Although engagement in sustainability and environmental concerns is mainstream in politics of today, the consensus may be challenged from several positions when discussing the context and concepts more critically. Over time, the concept of sustainability has broadened, and there are certain similarities with the thinking in the OM and the corporate sector, as shown in the CSR and CS literature. A global CSR industry has been established, and sustainability serves as an important part by affecting the code of behavior of business actors as well as mega-event’s organizers. For example, Timms (2015) has studied the influence of CSR on topics like workers’ rights, fair trade, and ethical commitment to the local community at the London 2012 Games.

The institutionalization process is driven by certain mechanisms structuring the field to gain legitimacy. In the terminology of DiMaggio and Powell (1983) and Matten and Moon (2008), mimetic and normative mechanisms are effective. Our framework is on several aspects in concert with Pentifallo and VanWynsberghe’s (2015) analysis of sustainability and the methods of environmental protection in the OM. Coercive isomorphism is at work in candidate procedures and questionnaire to bid committees, through regulatory functions of the charter, and through IOC Agenda 21 and conferences. Searching for the field’s best practice is a clear example of mimic isomorphism. This may happen through replicating earlier innovations or by transferring knowledge of and involvement in NGOs’ experiences. The IOC has formally institutionalized the knowledge transfer through their OGKM system, and international standards from EMAS to ISO are recognized as important guidelines for good practice. Several host cities like Vancouver have developed new management systems to handle sustainability and therewith contributed to the new practice in the field. The normative mechanism is in action with the increased form of professionalization inside the IOC and the OM, as well as through use of external experts and consultants. The IOC has their sustainability group supervising all functional areas within the

organization, and the different OCOGs in the host cities have their own sustainability staff and work with external experts to identify the norms and standards in this field.

Even though the processes of homogenization and standardization through the Olympic field are influential, each edition of the Games will be searching for something unique, producing a special legacy of their own in the memory of its people as well as to worldwide audiences. Sustainability is part of these legacy-producing policies. To be the first Games with a sustainable bid, the first *real* sustainable Games, the first with a sustainable planning and management system complying with international standards, are all parts of this history. Researchers have pointed to the bid organizations as important actors in this tendency to move towards new standards and recognition (Pentifallo & VanWynsberghe, 2015; Samuel & Stubbs, 2012). However, as is well known, ambitious objectives are easier to formulate than to achieve.

Critiques of the OM's ambitions and actions towards sustainability are neither new nor absent in the literature and public debate (Hayes & Horne, 2011; Lenskyj, 1998). Mega-events like the Olympics have long been considered an extravagant use of public money that benefits the wealthy and comes with many negative consequences, including harm to the environment. Hayes and Horne (2011) argue that planning for such mega-events is characterized by top-down planning dominated by elites, and they see no real influence from the inhabitants in the time-limited planning processes. Using London 2012 as an example, they saw sustainable development "hollowing out" from the technological planning models. Sophisticated as they may have been, there is a paradox between the £9-billion short-lived event and talks about sustainability; there is a structural gap between such growth-driven mega-events and a sustainable future built on citizens' wishes. According to the critics there is no place left for environmental citizenship in the established models of sustainability, ideological slogans like "green growth" and "best practice" do not compensate for corporate- and sponsor-driven development. The Olympics as they see it more resemble a mighty business like a profit-seeking corporation, rather than a real social movement.

The tension between talk and actions is an established one, and the challenges from political ecology is worthy of attention. Still, the talk-action dichotomy must be further considered. In accordance with the discussion in Christensen et al. (2013), discrepancies between action and talk may lead to a decoupling of serious action and stimulating hypocrisy. However, a lack of clarity and use of ambiguous concepts may also have the potential to better aligning practice with what is now considered aspirational talk. Introducing the concept of sustainability in many national contexts with different political, cultural, and economic institutions favors this sort of ambiguity. Over time, the comprehensive use of the vocabulary of sustainability will probably have consequences for actions. Tools and instruments will materialize in the hands of people whose success will be linked to concrete results.

Conclusion

Sustainable development has been adopted as part of mainstream policy across several fields. Through institutional processes and logic, sustainability has become standard procedure in the OM, enforced by regulatory, mimetic, and normative pressures – especially because the popular "triple bottom line" model balancing environmental, social, and economic considerations has won favorable reception and legitimacy. However, critics may find that concept is legitimizing mega-event practices, which will not turn out very sustainable in the long term.

Future research should explore the tensions between the different stands in politics and the scientific community. Longitudinal studies across several Olympics should be conducted to further investigate the "talk" and "walk" dichotomy to give us more knowledge about longtime

effects of how sustainability materialize in concrete practice long after the Games are gone. This could give us a better understanding of the dangers of impression management and the possibilities of aspirational talk. Studies of the possibilities that the environmental and ecological concerns could be given a lower priority in the OM in the shadow of a more “balanced” sustainability concept would also be welcomed. The inspiration from CSR and CS to the Olympic field is overt and important, as higher standards in procurement and supply chains could have lasting effects on business. For several large corporations, the Olympic Games represent an opportunity to demonstrate new technology involving faster adaptation to the requirements of sustainability.

Sport and sustainability may also be a demanding match, especially when top professional sports capture the stage. The professional sport industry and the Olympic Games have brought about stadia, venues, and preparations for a small group of elite athletes and entertainment for the masses. If the legacy and sustainability procedures adopted in the Olympic Movement could stimulate the sport industry and the international federations to joint actions with local development planners for more sustainable future Games, it would represent an important step forward.

Authors' Note

The authors thank the editors and Mr. Olav Myrholt for valuable comments on earlier drafts of this chapter.

References

- Bourdieu, P. (1977). *Outline of a theory of practice*. Cambridge, UK: Cambridge University Press.
- Brunsson, N., & Jacobsson, B. (2002). *A world of standards*. Oxford/New York, NY: Oxford University Press.
- Cantelon, H., & Letters, M. (2000). The making of the IOC environmental policy as the third dimension of the Olympic Movement. *International Review for the Sociology of Sport*, 35, 294–308.
- Carroll, A. B. (1999). Corporate social responsibility: Evolution of a definitional construct. *Business & Society*, 38, 268–295.
- Cashman, R. (2015). Sydney Olympic Park 2000 to 2010: A case study of legacy implementation over the longer term. In R. Holt, D. Ruta, & J. Panter (Eds.), *Routledge handbook of sport and legacy* (pp. 99–110). London: Routledge.
- Chappelet, J.-L. (2008). Olympic environmental concerns as a legacy of the Winter Games. *The International Journal of the History of Sport*, 25, 1884–1902.
- Chernushenko, D. (1994). *Greening our Games: Running sports events and facilities that won't cost the Earth*. Ottawa: Centurion Publishing & Marketing.
- Chernushenko, D., van der Kamp, A., & Stubbs, D. (2002). *Sustainable sport management: Running the environmentally, socially and economically responsible organization*. Ottawa: UNEP.
- Christensen, L. T., Morsing, M., & Thyssen, O. (2013). CSR as aspirational talk. *Organization*, 20, 372–393.
- DiMaggio, P. J., & Powell, W. W. (1983). The iron cage revisited: Institutional isomorphism and collective rationality in organizational fields. In W. W. Powell & P. J. DiMaggio (Eds.), *The new institutionalism in organizational analysis* (pp. 63–82). Chicago/London: The University of Chicago Press.
- Elkington, J. (1997). *Cannibals with forks: The triple bottom line of 21st century business*. Oxford, UK: Capstone Publishing.
- Emese, I., & Pandev, A. M. (2010). *The champions of earth award: The UN, the IOC, and sport for development*. London/Ontario: International Centre for Olympic Studies.
- Fligstein, N., & McAdam, D. (2012). *A theory of fields*. Oxford: Oxford University Press.
- Gold, J. R., & Gold, M. M. (2015). Framing the future: Sustainability, legacy and the 2012 London Games. In R. Holt, D. Ruta, & J. Panter (Eds.), *Routledge handbook of sport and legacy* (pp. 142–158). London: Routledge.

- Greer, J., & Bruno, K. (1996). *Greenwash: The reality behind corporate environmentalism*. Penang, Malaysia: Third World Network.
- Guthey, E., & Morsing, M. (2013). CSR and the mediated emergence of strategic ambiguity. *Journal of Business Ethics*, 120, 555–569.
- Haack, P., Schoeneborn, D., & Wickert, C. (2012). Talking the talk, moral entrapment, creeping commitment? Exploring narrative dynamics in corporate responsibility standardization. *Organization Studies*, 33, 815–845.
- Hayes, G., & Horne, J. (2011). Sustainable development, shock and awe? London 2012 and civil society. *Sociology*, 45, 749–764.
- Husted, B. W. (2015). Corporate social responsibility practice from 1800–1914: Past initiatives and current debates. *Business Ethics Quarterly*, 25, 125–141.
- IOC. (2015). *Host city contract: Operational requirement*. Retrieved from www.olympic.org
- IOC. (2016). *Olympic charter*. Retrieved from www.olympic.org
- Jørgensen, S., & Pedersen, L. J. T. (2015). *Responsible and profitable: Strategies for sustainable business models*. Oslo, Norway: Cappelen Damm Akademisk.
- Lenskyj, H. J. (1998). Sport and corporate environmentalism. *International Review for the Sociology of Sport*, 33, 341–354.
- Lesjø, J. H. (2000). Lillehammer 1994: Planning, figurations and the ‘green Winter Games.’ *International Review for the Sociology of Sport*, 35, 282–293.
- London Organising Committee of the Olympic and Paralympic Games. (2012). *Post-games sustainability report: A legacy of change*. Retrieved from <http://learninglegacy.independent.gov.uk/publications/london-2012-post-games-sustainability-report-a-legacy-of-php>
- Matten, D., & Moon, J. (2008). “Implicit” and “explicit” CSR: A conceptual framework for a comparative understanding of corporate social responsibility. *Academy of Management Review*, 33, 404–424.
- Midttun, A. (2013). Civilising capitalism – introduction. In A. Midttun (Ed.), *CSR and beyond. A Nordic perspective* (pp. 17–46). Oslo, Norway: Cappelen Damm Akademisk.
- Mintzberg, H. (1983). The case for corporate social responsibility. *Journal of Business Strategy*, 4(2), 3–15.
- Orlitzky, M., Schmidt, F. L., & Rynes, S. L. (2003). Corporate social and financial performance: A meta-analysis. *Organization Studies*, 24, 403–441.
- PEFO (1992). *Building an environmental policy and action plan for the International Olympic Committee*. Lillehammer: Project Environmental-Friendly Olympics.
- Pentifallo, C., & VanWynsberghe, R. (2015). Blame it on Rio: Isomorphism, environmental protection and sustainability in the Olympic Movement. In D. Bloyce & A. Smith (Eds.), *The ‘Olympic and Paralympic’ effect on public policy* (pp. 127–146). London: Routledge.
- Porter, M. E., & Kramer, M. R. (2011). Creating shared value. *Harvard Business Review*, 89(1/2), 62–77.
- Prasad, A., & Holzinger, I. (2013). Seeing through smoke and mirrors: A critical analysis of marketing CSR. *Journal of Business Research*, 66, 1915–1921.
- Roberts, J. (2003). The manufacture of corporate social responsibility: Constructing corporate sensibility. *Organization*, 10, 249–265.
- Samuel, S., & Stubbs, W. (2012). Green Olympics, green legacies? An exploration of the environmental legacies of the Olympic Games. *International Review for the Sociology of Sport*, 48, 485–504.
- Schaltegger, S., Hansen, E. G., & Lüdeke-Freund, F. (2016). Business models for sustainability: Origins, present research, and future avenues. *Organization & Environment*, 29, 3–10.
- Scott, W. R. (2008). *Institutions and organizations: Ideas and interests* (3rd ed.). Los Angeles: Sage.
- Stubbs, W., & Cocklin, C. (2008). Conceptualizing a “sustainability business model.” *Organization & Environment*, 21, 103–127.
- Timms, J. (2015). A social responsible business legacy. Raising standards in procurement, supply chains and employment at the London Olympics of 2012. In R. Holt, D. Ruta, & J. Panter (Eds.), *Routledge handbook of sport and legacy* (pp. 217–228). London: Routledge.
- TOROC (2006). Organising Committee for the 2006 Olympic Games in Turin. *Sustainability report*. Retrieved from <http://library.la84.org/6oic/OfficialReports/2006/2006v2p1.pdf>

- Vancouver Organizing Committee for the 2010 Olympic and Paralympic Winter Games. (2010). *Sustainability report*. Retrieved from <http://library.la84.org/60ic/OfficialReports/2010/2010v3.pdf>
- Weaver, G. R., Treviño, L. K., & Cochran, P. L. (1999). Integrated and decoupled corporate social performance: Management commitments, external pressures, and corporate ethics practices. *Academy of Management Journal*, 42, 539–552.
- Wickert, C., Scherer, A. G., & Spence, L. J. (2016). Walking and talking corporate social responsibility: Implications of firm size and organizational cost. *Journal of Management Studies*, 53, 1169–1196.
- World Commission on Environment and Development [WCED]. (1987). *Our common future*. Retrieved from www.eng.mcmaster.ca/sustainability/documents/OurCommonFuture.pdf
- Zadek, S. (2007). *The civil corporation* (2nd ed.). London: Earthscan.

9

ENVIRONMENTAL SUSTAINABILITY RHETORIC IN SPORT

Michael E. Pfahl

The integration of sustainability principles and environmental awareness and action are now a part of the world of sport, albeit in inconsistent ways. The need for sport personnel to take action in the environmental sphere stems from many different reasons and contextual drivers, including strategic opportunities or threats; the rise of multiple levels of governmental intervention, regulation, and policy formation; demand for change brought about by various stakeholders; and the personal value systems of individuals and communities/groups of sport professionals (Hillman & Keim, 2001; Shrivastava & Scott, 1992; Pfahl, 2010; Pfahl, Casper, Trendafilova, McCullough, & Nguyen, 2015; Thibault, 2009). Environmental change manifests itself in different ways in different sports. Facilities and events are common areas of focus, as they are the most visible environmental footprint for a sport organization or event (Jin, Mao, Zhang, & Walker, 2011; Kellison & Hong, 2015; Mallen, Adams, Stevens, & Thompson, 2010). Many other areas of sport operations are also involved and acted upon (e.g., marketing engagement, corporate sponsorship) when dealing with environmental issues (Casper & Pfahl, 2015a, 2015b; Casper, Pfahl, & McSherry, 2012; Kellison & Kim, 2014; Lenskyj, 1998). This chapter is not prescriptive, but rather, it examines the rhetorical aspects of this process in order to raise key issues in relation to developing and to communicating messages about environmental issues in sport. Sport professionals must become responsible for developing processes and practices for their organization (and with any necessary stakeholders) just as they would any other strategic part of their organization. The chapter first explores key points about rhetoric and general communication strategy. Second, it will identify the connections between rhetorical aspects of communication and environmental sustainability in sport. Third, factors that enable and constrain message development regarding sport and the natural environment will be discussed. Finally, it will provide a set of beginning or foundational tactical concepts to help sport managers identify their own voice and strategy regarding these issues.

Rhetoric in concept and practice

Rhetoric is a contested term encompassing a variety of philosophical foundations and approaches to conducting research and critical analyses of rhetorical situations. Rhetorical analyses seek to understand the culture around us as it ebbs and flows each day. The nature of rhetoric, as a function and an area of study, is inherently persuasive. It examines the social and political ways that

individuals construct reality through their own perceptions of it and actions within it, complete with the integrated issues of power (e.g., one over another) (Foucault and Pearson, 2001; Rosteck, 1999). In a broad sense, it allows for investigations into our language and the symbols of our communication (e.g., visual rhetoric) in order to make sense of how people understand the world around them (Rosteck, 1999). How these contexts are interpreted and understood by those who study them cause various conceptual and epistemological differences and discussions. Leach (2000) condensed this complicated area into three definitional areas: the act of persuasion, the way the acts of persuasion are studied/analyzed, and the power of the discourse that surrounds everyday life.

Many cultural artifacts can be studied for their rhetorical implications. For example, language use is a common context for rhetorical analysis as artifacts such as presidential speeches, political speeches (e.g., Martin Luther King, Jr.), and other such examples of human communication (Leff & Mohrmann, 1974; Nørreklit, 2003; Snow, 1985) are analyzed for content and meaning. Another example are places and spaces, as a place brings about a contestation of meaning and/or a (re)collection of ideas, meanings, memories, and contextual dialogue within the individuals who created the space and those visiting or at it (e.g., Astronauts Memorial at the Kennedy Space Center's visitors complex) (Aden, Han, Norander, Pfahl, Pollock, Young, 2009).

The messages and actions taken by sport personnel are artifacts that contain rhetorical elements (e.g., persuasion) and must be understood by their creators, as the messages will be interpreted and analyzed by various constituents (e.g., fans, media), all drawing conclusions as to the intent, effectiveness, altruism, and many other aspects of the subject under study.

The rhetorical nature of sport and the natural environment

The place of the natural environment has always been present, but is now accounted for in a variety of strategic and tactical ways. With each of the different stakeholders present in any form of sport organization (e.g., fans, organizational personnel, vendors) comes the need to communicate the various messages associated with environmental activities in that organization. Stoldt, Dittmore, and Branvold (2012) noted that communication in sport, in its broadest forms, is both a marketing and management function that is holistic in its connections with and impacts on an organization.

Early in his career, the author began consulting work with a major professional sport team regarding their environmental strategy. The most interesting aspect of this situation was that the person in charge of the environmental work, a high-ranking team executive, admitted he did not recycle at home, yet was in charge of the organization's environmental policy. Although perhaps not the norm in sport organizations, this example is not rare either. Additionally, this executive was quite aware of the delicate balance between taking action and speaking about the actions taken. He also noted that he wished to get the team's environmental priorities straight and organized before undertaking an external messaging campaign. From this example, it is clear that sport personnel face challenges to developing environmental strategy (Casper & Pfahl, 2015a; Pfahl, 2011) and to bringing that work to the general public as well as key stakeholders. This section examines key issues related to communication strategy: social construction of environmental activities, philosophical foundation of environmental work, and the inherent persuasive elements within all environmental and sustainability efforts.

Social construction of environmental activities

The first key that sport personnel must understand about communicating environmental issues is that they are socially constructed. Berger and Luckmann (1967) described the social

construction of daily life neatly by stating that the activities that take place each day are interpreted by individuals and made meaningful to them through their perceptions and understandings of it, which then are discussed and contested among individuals to understand *reality*. Language is the foundation of these interchanges (i.e., dialogic exchanges), and our structures, actions, and conventions (e.g., organization, social) are developed within the dialogic exchanges (Anderson, Baxter, & Cissna, 2004; Baxter & Montgomery, 1996). The outcome(s) of messages is inherently interpretive and opens doors to contextual debates about the messages among those engaging with them. The result is that there is only so much control sport professionals can have over a message and its meaning once it is placed in the public domain.

Research in the area of sport and natural environment shows that there is awareness and knowledge regarding environmental issues in sport among sport professionals (Casper & Pfahl, 2012; Casper & Pfahl, 2015a; Inoue & Kent, 2012; Pfahl et al., 2015; Trendafilova & Babiak, 2013). Specifically, it shows that awareness and knowledge vary, and will most likely continue to vary, with context changes such as organizational members entering and exiting an organization (i.e., organizational learning) or changes to environmental issues that require continued education and study. Thus, the outcomes of strategic planning and messaging are contested and can vary over time. The way to address these variations is to establish environmental and sustainability work as part of the philosophy of an organization (i.e., its strategic DNA).

Philosophical foundation

The second key rhetorical aspect to sustainability in sport is that sport organization personnel must be able to articulate a foundational philosophy towards the environment. Strategic manifestations of this idea are environmental vision and mission statements (Pfahl, 2011), which are rhetorical in nature because they communicate a belief system and an advocate role. They set out a pathway that leads the *who the organization is* to a *why they are the way they are* (i.e., underpinnings of organizational culture). Ott, Muraca, and Baatz (2011) argued that philosophy acts as a bridge to connect disparate *voices* together (e.g., fans, vendors) and provides the necessary umbrella of ideas and pushes the engagement and activist aspects of environmental work. In other words, the philosophy must overcome the individual and collective awareness and knowledge of organizational members, yet embody and drive them.

With a strategic philosophy in place, internal work can be coordinated, but so, too, can external work, especially that done with stakeholders (e.g., fans at a game, organizational personnel). It offers a “plurality of potentially complimentary [sic] forms of knowledge” (Adomßent & Godemann, 2011, p. 31) and closes the gap between the expert and the non-expert (Lorenzoni & Hume, 2009; Ott et al., 2011). Walker (2007) noted that communication is a pluralistic concept and, in situations of public interest, makes for shared understandings. In the case of environmental issues, there is meaning to be made, as decisions often lead to actions (e.g., policies) that need the co-construction element to create mutual responsibility and attention to detail (e.g., organization management – personnel; sport organization actions – fan actions) to assure adherence to the plan and continuation of the work into the future (Du, Bhattacharya, & Sen, 2010; Walker, 2007). With many environmental efforts in sport placed behind the scenes of many fans’ interactions with the organization, it is important to involve fans of all types, as well as related stakeholders, in the planning, implementation, and review of sustainability practices (Bekessy, Samson, & Clarkson, 2007). Although not all fans need to have equal roles, their voice, alongside those of other stakeholders (e.g., vendors), must be heard. The view reinforces the concepts of social contracts and corporate social responsibility (CSR) elements often associated with sport.

This aspect of environmental planning and conduct is a powerful rhetorical tool as it sends a message that the environment is not just a singular aspect within an organization's operations, but is an integral aspect of the overall web of other philosophical aspects of the organization's reason for being (Casper & Pfahl, 2015a; Pfahl, 2011). It becomes a platform for the strategic work being done towards addressing environmental issues (e.g., vision statement, strategic plan, implementation, assessment procedures). However, the idea of fit or congruence is important here. Many fans are not attending sporting events for a science lesson. The environmental issue is a contentious one, and Du, Bhattacharaya, and Sen (2010) noted that, in relation to any CSR effort, fit is an important part of achieving buy-in and cooperation. Research has shown that fans care about environmental efforts at events (Casper & Pfahl, 2015a; Casper, Pfahl, & McCullough, 2017), but taking these behaviors (e.g., recycling, composting) home is a different issue all together. Sport organization personnel must be clear as to their expectations for engagement with fans and what the outcomes are for such interaction.

Persuasion: from rhetorical goals and objectives to tactic development

Sport organization personnel follow these dialogic exchanges with internal and external discussion of environmental issues (i.e., tactics). The rhetorical nature of environmental work is inherently persuasive (Godemann & Michelsen, 2011). First, the progression from goals and objectives (via the mission and philosophy of the organization) stems from the strategic planning needed to understand what must be communicated within a context, allowing sport managers to weave together a set of actions that best communicate different messages for different constituents in ever-changing contexts (i.e., different actions taken towards environmental goals) (see also Kotler & Lee, 2008).

Next, it is important to remember that behavioral change is an important part of all environmental messaging if substantive and lasting change is to be achieved (i.e., adopting and accepting the persuasive message in one's life). For example, a call to conserve water inherently requires behavioral change. By nature of their unique social contract with their local community/communities (i.e., corporate social responsibility), sport organization personnel can "strengthen civil society, promote individual engagement [through organizational means], and support political education processes that enable individuals to actively take part in shaping a sustainable society" (Godemann & Michelsen, 2011, p. 9). In this case, *political* refers to a more broad definition in which action and change is privileged over *political* concepts such as elections and candidates.

Once tactics are established, it is still difficult to facilitate behavioral change at events and games and, more importantly, within the daily lives of fans. The final aspect of their tri-part framework is that of education and learning. Without much empirical support, it is still believed that many fans do not attend or participate in sporting events for a science lesson. However, the social place of sport means that they are in a position to act as educational (Godemann & Michelson, 2011). Events, activities, digital content, and many other platforms can be harnessed to provide these lessons, but they must be strategically done in order to not create adverse impacts to the *expected* fan experience at events.

A way to illustrate this point is to examine two progressive major professional teams, the Philadelphia Eagles and the St. Louis Cardinals, both of whom offer plentiful environmental information and data in text and graphical form on their respective websites. This information can be transformed into further value-added tactics such as a lesson plan or set of learning activities that can be provided to local area schools for use in various science or social science classes. This initial effort can then be connected to stadium and non-stadium activities outside the classroom and at game days (and beyond), connecting children and adults alike in and out of game

or event contexts. The point is that education within the context of sport can be interesting and engaging, but the underlying rhetorical aspects of behavior change and activism remain (i.e., persuasion). Creativity and planning will drive success in this area within the local community constructs of a particular organization or event as stakeholders are *persuaded* through various activities, ideas, and messages.

Enabling and constraining forces acting on messages (or impediments to effective rhetorical engagement)

Barrett (2007) examined the enabling and constraining forces on teachers engaged in environmental education. Although focused in a particular context, his research raised the important issue of the gap between message and practice, or in this case, understanding, of environmental issues vis-à-vis the messages about them (i.e., teaching, CSR activities). Hoppe (1993) noted that ideas in public policy contexts form the frame around the issue through discussion and the meanings that arise from them (in Sam, 2003). Sam (2003) argued,

It is through ideas and their rhetorical claims that policies are driven, given shape, and contested. Perhaps even more importantly, policy ideas are worthy of analysis because they not only *reflect* [italics in original] public values and the demands of interest groups, they *shape* [italics in original] public expectations as well.

(p. 190)

The statements by Hoppe (1993), and later Sam (2003), highlight the contestation of meaning in relation to environmental messages overall, but specifically within sport. Identifying an environmental issue is only the first step towards dealing with it in a strategic manner. The strategic response of what to say is also enabled and constrained by where it is said. This section examines two ideas that act in tension with the strategic efforts of sport personnel to enable and to constrain their actions, as well as to force careful consideration of actions and messages undertaken. The first idea involves the conduct of environmental activities within a public space, which can be conceived of as a *green* spotlight. The second involves the expectation and/or requirement of sport organization personnel to become educators of environmental issues within public spaces and local communities.

Actions in the green spotlight

Trendafilova, Babiak, and Heinze (2013) examined the CSR rationale for professional sport organization personnel to engage in environmental issues. Among their findings were the platforms that led to opportunities to discuss environmental work in conjunction with external constituents (e.g., fans). Studies showed there is increasing communication about environmental efforts on organizational websites and other platforms (Trendafilova et al., 2013; Pfahl & Stahl, 2015). What is being said is as important as where it was said. According to their research, environmental messages were placed in community relations sections of the website, whereas others were archived amidst press releases and/or annual reports (Trendafilova et al., 2013). However, these are not the most proactive ways to reach fans, although there is value in having a digital presence (Pfahl & Stahl, 2015).

Media reactions to published environmental work also play a role in (re)creating the concepts a sport manager wants to communicate. Trendafilova et al. (2013) noted that much of the media coverage they examined of green sport initiatives was centered on facilities (old and new). Thus,

there becomes an expectation in the public sphere that sport personnel enact and demonstrate their green initiatives in the facilities and while fans are present (i.e., visible, engaging). Sport personnel face additional external pressures as other teams in their league (or elsewhere) achieve recognition for environmental practices, thereby driving additional needs to maintain a presence for their green work even amidst various constraints on their actions (e.g., cost).

Educators of environmental issues

As shown by efforts to increase the level of environmental issues discussed within sport management and/or sport administration curricula in colleges and universities, environmental education/knowledge development is a tricky proposition given the complexity of the issue and how it can or should be taught/addressed and learned (Casper & Pfahl, 2012; Greenhalgh, LeCrom, & Dwyer, 2015; Lotz-Sisitka, Wals, Kronlid, & McGarry, 2015; Mallen & Chard, 2011; see also Chapter 6. Further, understanding environmental issues is not necessarily an automatic means towards acting in environmental ways. Not necessarily through their own fault, many sport managers are not trained in sustainability issues to an advanced level that can be used to create sustainable environmental strategies (i.e., goals, objectives, measures, and tactics).

Studies conducted to date on educational aspects of sport management and/or sport administration curricula show there is still a gap between understanding and practice among sport management students and professionals alike (Greenhalgh et al., 2015; Kellison & McCullough, 2016; Pfahl et al., 2015). Greenhalgh et al (2015), for example, studied the impact on student environmental behaviors via coursework used in a graduate sport management program (e.g., best practices, current issues). Their research found that it is difficult to affect individual worldviews related to the environment among students, especially older adults (e.g., graduate students working in the sports industry). Students (i.e., working professionals) such as these might not even be in a position to develop and to implement environmental activities within their current organization or are *pre-managers* (Casper & Pfahl, 2012), who have not fully entered the industry and are still learning about the administration of sport organizations, making behavioral change a difficult task.

Casper and Pfahl (2012) examined sport management/administration and recreation management majors at two American universities and found that personal values were strong predictors of behaviors related to the environment. In fact, personal norms were the most important factor in terms of changing an individual's behavior and supporting the awareness–knowledge–action linkage that indicates environmental understanding and activity (Casper et al., 2012). This is not surprising as people who are aware of and concerned by environmental issues will tend to act more according to environmental and sustainability ways, but Casper and colleagues (2012) noted that, in their single study, this was not the case in terms of having a pro-environmental belief and taking action. The mediator or driver between them was, once again, personal norms.

Sport personnel cannot simply educate organizational members or expect that stakeholders will understand the environmental awareness–knowledge–action linkages in their respective lives. When educating others about environmental issues within a sport organization's individual context, a clear vision is needed to determine what is to be taught or emphasized; this process requires developing not only the environmental materials, but also identifying (and ideally addressing) barriers or problems associated with it (MacVaugh & Norton, 2012). Sport personnel must facilitate a constant engagement with environmental issues in ways that allow individuals, be they fans or other stakeholders, to continuously ask themselves what they can do to assist a sport organization with their work, as well as to conduct educational and training activities with stakeholders and organizational members (i.e., continuous learning). In this case, rhetorical

techniques that work well for fan development (e.g., community) can also be used to work for sport organization environmental goals (e.g., *our team, our community*). They can work to teach without being experts, but this does make transparent and authentic rhetoric and engagement requirements for sustainable sustainability strategy and practices.

Speaking green: what to say and how to say it

Sport professionals ultimately have to make a decision to discuss their environmental work in the public sphere. With so many points of sustainability emphasis visible in public places (e.g., recycling, water usage) as well as held accountable by legal and social contracts (e.g., municipally funded stadia), it is important to understand how these points intersect and ultimately create a language of sustainability for a sports organization or event. From the highest strategic level (e.g., vision and mission statements) to the measures of success for sustainability efforts, it is important to know that the structure of messages (e.g., persuasive elements, word choice) and format (e.g., in person, website content) are as important as the content (e.g., data, examples, calls to action). When such messages are sent (and to whom they are sent) will also affect how the message is viewed, understood, and acted upon. Examined here are foundational steps to take when creating and evaluating environmental and sustainability messaging and activities: developing vision and mission statements to guide planning, choosing what information to discuss in the public sphere, considering the interpretive or (co)constructed nature of messages, and making the strategic choices for an organization.

Determining direction: vision and mission statements

At the very beginning of any sustainability strategy is the vision (i.e., broad in scope; a rationale) and mission (i.e., direct statement of intent) for what must get done (Pfahl, 2011). These statements emanate from the philosophical and strategic foundations (i.e., values) an organization projects. Through these statements, organizational philosophy and values are revealed. Thus, it is important to prepare them with an eye on overall organizational values and philosophy within a sphere of environmental issues. In other words, blend the overall organizational reason for being with the sustainability efforts. There is no single way to accomplish this, but it is suggested that the language should be audience driven, but not audience specific (Abrahams, 1999; Pfahl, 2011).

In the end, these foundational statements will underpin all subsequent thinking about environmental and sustainability work, so they should be allotted proper planning and time to develop them. It is necessary, then, to undertake further study into the overall strategic planning for green efforts. Like other functional strategies in business, it is necessary to understand micro-level (i.e., organizational-level) structures developed to undertake environmental work, while also studying macro trends (i.e., industry level) so that comparisons can be made between contexts and not just among them. This chapter provided many departure points for such strategic research, and it is important to understand them if measures of success (e.g., fan engagement, fan behavior change) are to be realized.

Status update: choosing communication content and platforms

Sport organization personnel must make choices as to what and when to communicate environmental efforts. Internal and external stakeholders will be affected by these choices, so there is also a layer of evaluation as to how to communicate with both groups. One strategy is to take a

measured and quiet approach that provides information externally when there are data and support to show progress and substantive change. Other times, there is a possibility of putting out everything done by an organization to the public sphere, but this area runs the risk of alienating stakeholders (or confusing them), especially if overly technical language is used (Pfahl, 2011). A third way is to just undertake the efforts and not say much of anything to anyone except those stakeholders crucial to achieving organizational environment goals. Each sport organization context is different, and it is up to the strategic planning process to determine who and how communication of environmental efforts is accomplished.

Of particular note is the internal communication, as environmental efforts must be an organizational commitment, and each person in the organization must understand how the work affects their particular job and the ways in which he or she can assist (formal and informal assistance) (Pfahl, 2010, 2011). Internal operations will see the most frequent changes to operations, and the individual or personal, systemic, and organizational or structural elements must be clear and well understood by everyone in the organization (Pfahl, 2010, 2011).

Once the environmental and sustainability work commences, it will be necessary to communicate it to a variety of internal and external stakeholders. Not all aspects of this work must be shared with every stakeholder, but well-crafted messages for targeted audiences will increase the likelihood of the work towards environmental efforts being understood, recognized, and, when needed, acted upon (Pfahl, 2011; Spector, Chard, Mallen, & Hyatt, 2012; Walker, 2007). These audiences will be internal and external in nature. Although it is not necessary for a fan to know about every plumbing change, for example, it is important to share news of water updates and upgrades as well as results of empirical testing of water usage, as these elements show a clear commitment and a transparency of data collection (i.e., authenticity stemming from the vision and mission beginnings). Again, there is no single way to do this (e.g., press releases, environmental annual reports), but each organization must make data gathering and analysis part of their environment efforts in order to close the strategic loop (i.e., concept through to re-conceptualization), especially when each stakeholder places unique demands on the organization for information (Bragd, Bridge, den Hond, & Jose, 1998).

Popular information sources developed by sport personnel include environmental reports (e.g., Philadelphia Eagles, the National Hockey League), websites dedicated to green efforts (e.g., Philadelphia Eagles, St. Louis Cardinals, The Football Association of England, Adidas), and in-venue operations. These efforts underscore the importance of communicating the ideals and values of sustainability and reinforce goodwill, legitimacy, and the social contract of a sport organization or event and the communities it affects (Herzig & Schaltegger, 2011). Further research into engagement and messaging, especially understanding by stakeholders, is needed. Not all messages or activities work for every stakeholder (e.g., fan), but each can be understood in order to develop a suite of options for continuing environmental dialogue.

Message received?: the interpretive nature of environmental messaging and actions

Despite efforts to communicate and share information about environmental efforts, as noted earlier, communication is a (co)constructed undertaking, making it difficult to ensure that a sent message is received as intended. Each sustainability and environmental situation is unique, and although there are shared ideas, problems, and practices, generalizing about specific details is much more challenging than examining strategic approaches to understanding the specific context at hand (Herzig & Schaltegger, 2011). Stakeholders will interpret and understand environmental and sustainability communications and data in different ways. The focus on performance

(i.e., *how are we doing?*) can overshadow the long-term impacts of environmental efforts on stakeholders (e.g., local community impact) (Herzig & Schaltegger, 2011). In simple terms, sport and environmental operations are not drivers for fans to seek out information and make decisions about how well their chosen sport organization or event is going green as opposed to traditional views of sport (e.g., *was it fun?, did we win?*).

Sport personnel must learn there is a balance between information sharing and fan interest. This is one reason why changing behaviors in sport beyond those undertaken at an event (e.g., recycle at a game) is so challenging (Pfahl, 2010; Greenhalgh et al., 2015; Trendafilova et al., 2013). This point is connected to the ones in the previous section, and research into the nature of the relationship between fan–sport organization–environment can help to identify the ways in which holistic messages, or at best holistic strategies, can be developed to reach, to connect, and to influence as many fans as possible to alter their behaviors at events and at home.

Environmental action in sport: choose your own direction

An increasingly important area of study is the use of environmental activities to engage with fans and sport personnel enacting a quasi-activist or activist role (Inoue & Kent, 2012). This activity can take the form of green games and other advocacy platforms (Casper, Pfahl, & McCullough, 2014; Inoue & Kent, 2012), outreach activities with corporate social responsibility implications (CSR), or internal activities that fans are able to access via various communication channels (Pfahl, 2010; Trendafilova & Babiak, 2013; Trendafilova, Babiak, & Heinze, 2013). Even the *pre-managers* in the industry (i.e., students) are affected by the linkages between sport and environmental issues because their understanding, although in a pre-hire socialization stage (i.e., university study) shapes and informs perspectives about the environment that will be utilized once in the industry (Casper & Pfahl, 2012; Greenhalgh et al., 2015). In other words, early results stemming from efforts to educate current and future sport professionals about environmental issues are mixed. However, as Greenhalgh et al (2015) noted, sport, as a whole, is in an early stage overall in terms of holistic understanding of and action regarding environmental issues (see also McCullough, Pfahl, & Nguyen, 2015). Individual sport organizations are at many different levels of environmental activity, and that variation is even more pronounced at the level of an individual person.

Sport personnel who work to address environmental goals and objectives can use various digital platforms to inform, to instruct, and to disseminate information (Pfahl & Stahl, 2015). In terms of achieving engagement with stakeholders (e.g., fans), there is no one method, strategy, or platform that can be used to develop and communicate environmental messages in a perfect way. Each context is unique, even within the same organization, and one situation does not necessarily inform the next. However, no matter what mechanism(s) might be used, it should align with the organization's environmental goals, objectives, and, when necessary, stakeholders (e.g., fans, vendors) (Isenman, 2004; Isenman, Bey, & Welter, 2007; Pfahl & Stahl, 2015; Rikhardsson, Andersen, Jacob, & Bang, 2002).

The recent developments in social, digital, and connective media push the importance of communicating organizational messages into new areas replete with new challenges (Hanna, Rohm, & Crittenden, 2011; Mangold & Faulds, 2009). Whether the platform for communication is Twitter, Facebook, website content, or any other digital space, the ways messages are developed and communicated will be in tension with the ways these messages are understood and received by various stakeholders, (e.g., fans, vendors) (Clavio, 2011; Eagleman, 2013; Pfahl, & Stahl, 2015; Wenner, 1989; Williams & Chin, 2010; Witkemper, Lim, & Waldburger, 2012). To do this, it is important to remember that messages – both

overt and subtle – matter. For example, a community outreach event that utilizes a large amount of paper or Styrofoam would not be considered a fit with the environmental plan of the organization. Systematic and interconnected thinking about planning (i.e., goals, objectives), organization (i.e., tactics), implementation (i.e., tactics), and measures of success (i.e., metrics) is needed. Few studies actually examine activation of green ideas in order to see what impact they do have on fans (Casper et al., 2014; McCullough & Kellison, 2016). This research can include studies in the activation efforts itself (e.g., green game) or via relationships among fans, sport organization personnel, and sponsors. As with all other research into sport and the environment, work in this space is in the early stages, and there are many avenues to continue the exploration into the complex and complicated relationship between sport and the natural environment.

Conclusion

In summary, once sport organization personnel make the choice to add environmental and sustainability issues to their overall strategic planning and organizational operations, it is incumbent upon them to communicate to and with their stakeholders. The language used in messaging, the platforms used to disseminate, and the avenues used for engagement and feedback must be developed in order to truly bring all stakeholders to the table. This chapter explored key points about rhetoric and general communication strategy. Second, it identified factors that enable and constrain message development regarding sport and the natural environment issues. Finally, it discussed a set of beginning or foundational tactical concepts to help sport managers identify their own voice and strategy regarding these issues. Ultimately, the never-ending nature of environmental and sustainability work means that the communication efforts are not *marketing* per se, but rather, a clear, sincere, and transparent way to share information with stakeholders and truly alter planning and operations to achieve increasing returns on environmental and sustainability investments.

References

- Abrahams, J. (1999). *101 mission statements from top companies: Plus guidelines for writing your own mission statement*. Toronto: Ten Speed Press.
- Aden, R. C., Han, M. W., Norander, S., Pfahl, M. E., Pollock, T. P., & Young, S. L. (2009). Re-collection: A proposal for refining the study of collective memory and its places. *Communication Theory, 19*, 311–336.
- Adom̄bent, M., & Godemann, J. (2011). Sustainability communication: An integrative approach. In J. Godemann and G. Michelsen (Eds.), *Sustainability communication: Interdisciplinary perspectives and theoretical foundations* (pp. 27–37). Dordrecht, the Netherlands: Springer.
- Anderson, R., Baxter, L., & Cissna, K. (2003). *Dialogue: Theorizing difference in communication studies*. Thousand Oaks, CA: Sage Publications.
- Barrett, M. J. (2007). Homework and fieldwork: Investigations into the rhetoric – reality gap in environmental education research and pedagogy. *Environmental Education Research, 13*, 209–223.
- Baxter, L., & Montgomery, B. (1996). *Relating: Dialogues and dialectics*. New York, NY: Guilford Press.
- Bekessy, S., Samson, K., & Clarkson, R. (2007). The failure of non-binding declarations to achieve university sustainability: A need for accountability. *International Journal of Sustainability in Higher Education, 8*, 301–316.
- Berger, P., & Luckmann, T. (1967). *The social construction of reality: A treatise in the sociology of knowledge*. New York, NY: Anchor Books.
- Bragd, A., Bridge, G., den Hond, F., & Jose, P. (1998). Beyond greening: New dialogue and new approaches for developing sustainability. *Business Strategy and the Environment, 7*, 179–192.

- Casper, J., & Pfahl, M. (2012). Environmental behavior frameworks of sport and recreation undergraduate students. *Sport Management Education Journal*, 6, 8–20.
- Casper, J., & Pfahl, M. (2015a). Environmental sustainability practices in U.S. NCAA Division III athletics departments. *International Journal of Event Management Research*, 10(2), 12–36.
- Casper, J., & Pfahl, M. (Eds.). (2015b). *Sport management and the natural environment: Theory and practice*. London: Routledge.
- Casper, J., Pfahl, M., & McCullough, B. (2014). Intercollegiate sport and the environment: Examining fan engagement based on athletics department sustainability efforts. *Journal of Issues in Intercollegiate Athletics*, 7, 65–91.
- Casper, J., Pfahl, M., & McCullough, B. P. (2017). Is going green worth it? Assessing fan engagement and perceptions of athletic department environmental efforts. Submitted to *Journal of Applied Sport Management*, 9(1), 106–134.
- Casper, J., Pfahl, M., & McSherry, M. (2012). Athletics department awareness and action regarding the environment: A study of NCAA athletics department sustainability practices. *Journal of Sport Management*, 26, 11–29.
- Clavio, G. (2011). Social media and the college football audience. *Journal of Issues in Intercollegiate Athletics*, 4, 309–325.
- Du, S., Bhattacharya, C., & Sen, S. (2010). Maximizing business returns to corporate social responsibility (CSR): The role of CSR communication. *International Journal of Management Reviews*, 12, 8–19.
- Eagleman, A. (2013). Acceptance, motivations, and usage of social media as a marketing communications tool amongst employees of sport national governing bodies. *Sport Management Review*, 16, 488–497.
- Foucault, M., & Pearson, J. (2001). *Fearless speech*. Los Angeles: Semiotext(e).
- Godemann, J., & Michelsen, G. (2011). *Sustainability communication – an introduction*. In J. Godemann & G. Michelsen (Eds.), *Sustainability communication: Interdisciplinary perspectives and theoretical foundations* (pp. 3–11). Dordrecht, the Netherlands: Springer.
- Greenhalgh, G., LeCrom, C., & Dwyer, B. (2015). Going green? The behavioral impact of a sport and the environment course. *Journal of Contemporary Athletics*, 9(1), 49–60.
- Hanna, R., Rohm, A., & Crittenden, V. (2011). We're all connected: The power of the social media ecosystem. *Business Horizons*, 54, 265–273.
- Herzig, C., & Schaltegger, S. (2011). Corporate sustainability reporting. In J. Godeman and G. Michelsen (Eds.), *Sustainability communication* (pp. 151–169). London: Springer.
- Hillman, A., & Keim, G. (2001). Shareholder value, stakeholder management, and social issues: What's the bottom line? *Strategic Management Journal*, 22, 125–139.
- Hoppe, R. (1993). Political judgment and the policy cycle: The case of ethnicity policy arguments in the Netherlands. In F. Fischer & J. Forrester (Eds.), *The argumentative turn in policy analysis and planning* (pp. 77–100). London: UCL Press.
- Inoue, Y., & Kent, A. (2012). Sport teams as promoters of pro-environmental behavior: An empirical study. *Journal of Sport Management*, 26, 417–432.
- Isenmann, R. (2004). Internet-based sustainability reporting. *International Journal of Environment and Sustainable Development*, 3, 145–167.
- Isenmann, R., Bey, C., & Welter, M. (2007). Online reporting for sustainability issues. *Business Strategy and the Environment*, 16, 487–501.
- Jin, L., Mao, L., Zhang, J., & Walker, M. (2011). Impact of green stadium initiatives on donor intentions toward an intercollegiate athletic programme. *International Journal of Sport Management and Marketing*, 10, 121–141.
- Kellison, T. B., & Hong, S. (2015). The adoption and diffusion of pro-environmental stadium design. *European Sport Management Quarterly*, 15, 249–269.
- Kellison, T. B., & Kim, Y. (2014). Marketing pro-environmental venues in professional sport: Planting seeds of change among existing and prospective consumers. *Journal of Sport Management*, 28, 34–48.
- Kellison, T. B., & McCullough, B. P. (2016). A forecast for the mainstreaming of environmental sustainability. *Sport & Entertainment Review*, 2(1), 11–18.

- Kotler, P., & Lee, N. (2008). *Corporate social responsibility: Doing the most good for your company and your cause*. New York, NY: John Wiley & Sons.
- Leach, J. (2000). Rhetorical analysis. In M. Bauer & G. Gaskell (Eds.), *Qualitative researching with text, image and sound: A practical handbook* (pp. 207–226). Thousand Oaks, CA: Sage.
- Leff, M., & Mohrmann, G. (1974). Lincoln at Cooper Union: A rhetorical analysis of the text. *Quarterly Journal of Speech*, 60, 346–358.
- Lenskyj, H. (1998). Sport and corporate environmentalism: The case of the Sydney 2000 Olympics. *International Review for the Sociology of Sport*, 33, 341–354.
- Lorenzoni, I., & Hulme, M. (2009). Believing is seeing: Laypeople's views of future socio-economic and climate change in England and in Italy. *Public Understanding of Science*, 18, 383–400.
- Lotz-Sisitka, H., Wals, A., Kronlid, D., & McGarry, D. (2015). Transformative, transgressive social learning: Rethinking higher education pedagogy in times of systemic global dysfunction. *Current Opinion in Environmental Sustainability*, 16, 73–80.
- MacVaugh, J., & Norton, M. (2012). Introducing sustainability into business education contexts using active learning. *International Journal of Sustainability in Higher Education*, 13, 72–87.
- Mallen, C., Adams, L., Stevens, J., & Thompson, L. (2010). Environmental sustainability in sport facility management: A Delphi study. *European Sport Management Quarterly*, 10, 367–389.
- Mallen, C., & Chard, C. (2011). A framework for debating the future of environmental sustainability in the sport academy. *Sport Management Review*, 14, 424–433.
- Mangold, W., & Faulds, D. J. (2009). Social media: The new hybrid element of the promotion mix. *Business Horizons*, 52, 357–365.
- McCullough, B. P., & Kellison, T. B. (2016). Go green for the home team: Sense of place and environmental sustainability in sport. *Journal of Sustainability Education*, 11(1), 1–14.
- McCullough, B. P., Pfahl, M. E., & Nguyen, S. N. (2015). The green waves of environmental sustainability in sport. *Sport in Society*, 1–26.
- Nørreklit, H. (2003). The balanced scorecard: What is the score? A rhetorical analysis of the balanced scorecard. *Accounting, Organizations and Society*, 28, 591–619.
- Ott, K., Muraca, B., & Baatz, C. (2011). Strong sustainability as a frame for sustainability communication. In J. Godemann & G. Michelsen (Eds.), *Sustainability communication: Interdisciplinary perspectives and theoretical foundations* (pp. 13–25). Dordrecht, the Netherlands: Springer.
- Pfahl, M. (2010). Strategic issues associated with the development of internal sustainability teams in sport organizations: A framework for action and sustainable environmental performance. *International Journal of Sport Management, Recreation, and Tourism*, 6(C), 37–61.
- Pfahl, M. (2011). *Sport and the natural environment: A strategic guide*. Dubuque, IA: Kendall Hunt Publishing Company.
- Pfahl, M., Casper, J., Trendafilova, S., McCullough, B., & Nguyen, S. (2015). Crossing boundaries: An examination of sustainability department and athletics department collaboration regarding environmental issues. *Communication & Sport*, 3, 27–56.
- Pfahl, M., & Stahl, A. (2015). Communicating the green in sport. In J. Casper & M. Pfahl (Eds.), *Sport management and the natural environment: Theory and practice* (pp. 143–168). London: Routledge.
- Rikhardsson, P., Andersen, R., Jacob, A., & Bang, H. (2002). Sustainability reporting on the internet. *Greener Management International*, 2002(40), 57–75.
- Rosteck, T. (Ed.). (1999). *At the intersection: Cultural studies and rhetorical studies*. New York, NY: Guilford Publications.
- Sam, M. P. (2003). What's the big idea? Reading the rhetoric of a national sport policy process. *Sociology of Sport Journal*, 20, 189–213.
- Shrivastava, P., & Scott, P. (1992). Corporate self-greenewal: Strategic responses to environmentalism. *Business Strategy and the Environment*, 3, 9–21.
- Snow, M. (1985). Martin Luther King's "Letter from Birmingham Jail" as Pauline epistle. *Quarterly Journal of Speech*, 71, 318–334.
- Spector, S., Chard, C., Mallen, C., & Hyatt, C. (2012). Socially constructed environmental issues and sport: A content analysis of ski resort environmental communications. *Sport Management Review*, 15, 416–433.

- Stoldt, G., Dittmore, S., & Branvold, S. (2012). *Sport public relations: Managing stakeholder communication*. New York, NY: Human Kinetics.
- Thibault, L. (2009). Globalization of sport: An inconvenient truth. *Journal of Sport Management, 23*, 1–20.
- Trendafilova, S., & Babiak, K. (2013). Understanding strategic corporate environmental responsibility in professional sport. *International Journal of Sport Management and Marketing, 13*, 1–26.
- Trendafilova, S., Babiak, K., & Heinze, K. (2013). Corporate social responsibility and environmental sustainability: Why professional sport is greening the playing field. *Sport Management Review, 16*, 298–313.
- Walker, G. (2007). Public participation as participatory communication in environmental policy decision-making: From concepts to structured conversations. *Environmental Communication, 1*, 99–110.
- Wenner, L. (1989). Media, sports, and society: The research agenda. In L. Wenner (Ed.), *Media, sports, and society* (pp. 13–48). Newbury Park, CA: Sage.
- Williams, J., & Chinn, S. (2010). Meeting relationship-marketing goals through social media: A conceptual model for sport marketers. *International Journal of Sport Communication, 3*, 422–437.
- Witkemper, C., Lim, C. H., & Waldburger, A. (2012). Social media and sports marketing: Examining the motivations and constraints of Twitter users. *Sport Marketing Quarterly, 21*, 170–183.

10

MARKETING SUSTAINABILITY THROUGH SPORT

The importance of target market insights

Galen T. Trail and Brian P. McCullough

Environmental sustainability has become a common topic of discussion ranging from climate change, transferring our dependence on fossil fuels to renewable energy resources, and reducing our waste. Momentum is being generated among non-government organizations to promote the economic, social, and environmental benefits of integrating sustainability into operations and product development (Hopwood, Mellor, & O'Brien, 2005). International forums like COP21 in Paris, the International Olympic Committee's conferences on Sport and the Environment, and the Green Sports Alliance Summits have been able to bring environmental sustainability to the forefront of discussion within the sport industry. Encouragingly sport organizations have responded by implementing environmental sustainability initiatives like waste management (i.e., recycling, composting), energy management, and water management programs. In fact, some organizations have even launched comprehensive sustainability campaigns (McCullough, Pfahl, & Nguyen, 2016). These organizations can achieve the economic, social, and environmental benefits by implementing such programs (McCullough & Cunningham, 2010). Despite these proactive efforts, a majority of sport executives are slow to realize the value of a fully comprehensive sustainability campaign to engage sport fans (Casper & Pfahl, 2012; Casper, Pfahl, & McSherry, 2012). As a result, sport fans (i.e., consumers) are hesitant to engage in environmental sustainability efforts or behave in sustainable ways when attending sporting events (McCullough, 2013; McCullough & Cunningham, 2011). Because fans are not engaging in these efforts, how do we get them to participate?

McCullough and Kellison (2016) proposed that sport organizations have an inherent advantage in getting people to participate in sustainability campaigns. Sport organizations can leverage the brand affinity (i.e., fan identification) fans/spectators have with their team to influence their behaviors. That is, a person who is a fan of a specific team may be influenced by messages from their team to participate in specific sustainable behaviors or campaigns (McCullough, 2013). However, this strategy is not commonly used among sport marketing experts when communicating sustainability efforts or campaigns of their organization. Perhaps most concerning may be the fact that these executives may not know how to best implement and assess sustainability campaigns to make them as successful as they could be. This professional limitation could cause a sustainability initiative, which may be otherwise be a worthwhile effort, to be disbanded because it was deemed unsuccessful because of a lack of fan participation. But in reality the communication strategy, not the sustainability effort, was executed improperly.

Until recently no guidelines for sport organizations on how to create sustainability marketing campaigns have been available. Previous researchers, the first to examine these issues, has seen mixed results when evaluating sustainability initiatives and campaigns (Casper & Pfahl, 2012; Casper, Pfahl, & McCullough, 2014; 2017; McCullough, 2013; McCullough & Cunningham, 2011). Casper and colleagues (2012; 2014; 2017) examined the influence of green games on sustainable behavior intentions of sport spectators. Green games are commonly used as a one-time showcase at a sporting event to engage and educate spectators on the organization's sustainability efforts. The green game approach is a good initial effort, but is limited because of its one-off communication to fans. It has been suggested that perpetual communications are necessary to continually engage fans to promote behavioral change. McCullough's work focused on recycling behaviors of sport spectators (McCullough, 2013; McCullough & Cunningham, 2011). The most fruitful aspects of his work, relative to this chapter, focuses on the limitations encountered by spectators who want to engage in sustainable behaviors at sporting events. However, these external constraints create such a burden that they cannot or do not participate due to confusion on how to be sustainable or lack of access to such opportunities. However, McCullough and Casper's work examined the entire fan population and did not examine specific market segments. Examining market segments can enhance the creation and evaluation of a successful sustainability campaign. Additionally, Martin, Ross, and Irwin (2015) examined the effectiveness of community-based social marketing. These are also efforts employed by various sport organizations to directly communicate sustainability messages to fans, but these efforts are often costly and have a limited reach, especially when you consider sporting events can attract 30,000 to 100,000+ people (e.g., 104,944 capacity in Ohio Stadium).

To fill the gaps in the literature, Trail (2015, 2016) proposed several strategies, models, and frameworks to help in this endeavor, but they need to be tested much more in depth. As a consequence, Trail and McCullough (forthcoming) tested the Sport Participant Sustainability Behavior model. They found that the data they collected supported the tested model. They found that needs, values, internal constraints, and points of attachment are significantly related to attitudes towards the campaign, more so than previous sport-oriented studies (Casper et al., 2014; 2017; McCullough & Cunningham, 2011) examining the predictors of attitudes toward sustainability. Further, attitudes towards the campaign, external constraints, and past sustainable behaviors significantly predict behavioral intentions to engage in the sustainability initiatives specific to the context of their study. However, Trail and McCullough suggested that further work is needed. Specifically, they recommended that future research examine how sport organizations can identify fan segments and craft specific messages to promote sustainable behavioral change. Thus, the purpose of this chapter is to give a brief overview of the strategies, models, and frameworks that can be used by sport organizations to develop and assess sustainability marketing/communication campaigns. Specifically, we will discuss the theories behind the models. In addition, we will dig deeper into the relationships tested in the Trail and McCullough (forthcoming) research, which will allow us to examine differences in market segments that allow for specific sustainability marketing campaigns to be developed for each segment, allowing more effective communication by the sport organization to the market segments.

Communications strategy wheel

Trail (2016) proposed the Communications Strategy Wheel (CSW), based on Young's (2010) Brand Media Strategy Wheel and other similar wheels. Trail proposed the framework in order to help sport organizations with the creation and assessment of sustainability campaigns. In the

first stage of the CSW, the sport organization needs to do sufficient market research to be able to segment their market and to develop insights for each target market. Once the organization has a sufficient understanding of their target markets, they need to develop communication goals and key performance indicators (KPIs), which will probably differ across the different segments. After these have been created, the organization needs to determine the moments of receptivity for each segment. This entails figuring out where and when the customers are going to be most receptive to the communication message. Then the campaign messages can be developed. These messages will probably vary across the segments as well.

The organization then needs to create the campaign architecture. Trail (2016) defined campaign architecture as the “plan in which each customer (or fan) has the best experience possible at every touchpoint on the consumer pathway” (p. 207). Relative to the sustainability campaign pathway for sport fans/participants, this means that the organization needs to “incorporate the campaign as part of the team’s brand, interweaving the connections of fandom along with the insights” (Trail, 2016, p. 207) that the organization has about the fans or participants. Next, the campaign idea (message) needs to be amplified. As Wilshire (2015) noted, amplification happens when the communication message is “shared, either through organic or paid engagement, within social marketing channels thereby increasing your word-of-mouth exposure” (para. 4). Finally, in the last stage, the organization implements the plan. Trail (2016) noted that this refers to “how strategies are executed through media solutions and how the activation ideas are brought to life” (p. 219). It is the implementation of all of the details of all of the previous stages in the Communications Strategy Wheel.

However, the entire Communications Strategy Wheel is predicated on the sport organization understanding the target market insights in Stage 1. If the sport organization has not done the market research and does not have insight into their segments, then any subsequent endeavors are superfluous. So the rest of the chapter will be focused on how to understand the markets specific to sustainability campaigns and communications.

Sustainability Campaign Pathway

Earlier we referenced the Sustainability Campaign Pathway for Fans/Participants (Figure 10.1). We need to discuss it more fully here as it will really help sport organizations understand the sequence of stages that the fan of a sports team, or in our specific case for this chapter, the stages that a participant in a sport event, will progress through when determining whether they want to participate in a sustainability campaign sponsored by the sport organization. Trail (2016)

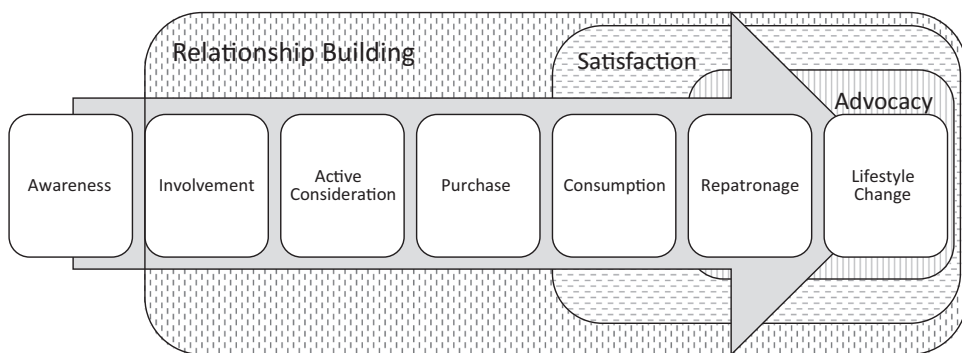


Figure 10.1 Sustainability Campaign Pathway for participants

developed the Sustainability Campaign Pathway based on Young's (2010) consumer pathway and other similar pathways espoused in the literature, with incorporation of ideas from Belz and Peattie's (2012) sustainability model.

Understanding the pathway is the first step in generating the target market insights mentioned earlier for the sport organization. If the organization can understand how the customer progresses through each of the stages, then the organization can develop the rest of the Communications Strategy Wheel considerably easier and better.

So let's discuss each of the pathway stages briefly. In the awareness stage, the consumer (participant) becomes aware of the sustainability campaign through communications from the sport organization, the media, friends, family, etc. Without awareness of the campaign, nothing else can happen. Involvement is the second stage. In this stage, the participant starts to investigate or search for information about the campaign. Hopefully, the participant then progresses into the active consideration stage. In this stage the participant has all of the information she needs to determine whether to participate or not and will have decided whether she feels positively or negatively about the campaign. The next stage is the decision-making stage, where the participant in the activity or event actually decides to become involved in the sustainability campaign or not. If she decides to participate, she moves to the initial participation stage, which refers to the participant's first experiences being involved in the sustainability campaign (e.g., recycling their waste during a 5K run rather than throwing it on the ground). As the person participates for the first time, she assesses how satisfied she is with her participation and with the campaign. This will determine whether she continues to participate in the future (the next stage). Assuming the experience is a good one and not too onerous, the person will hopefully continue to participate in the campaign. At some point, after repetitive participation, the behaviors will become part-and-parcel of a lifestyle change, where the behavior becomes automatic and the person always recycles (or whatever). In addition, as the participant participates more and more, her satisfaction level should increase and she should also start to advocate others to recycle as well. Throughout this whole process, the organization is building and maintaining the relationship with the participant, encouraging her, supporting her, and building a trusting and compassionate relationship (Kim & Trail, 2011).

Once the sport organization understands how their participants' progress along the Sustainability Campaign Pathway, the next step to gain additional insight into the market segments is for the organization to understand *why* the participant would want to participate in the campaign. Unfortunately, the pathway does not help the organization understand the motivation behind why the individual would want to participate. So we turn to Trail's (2015, 2016) Sport Fan Sustainability Behavior Model to explicate the reasoning behind the participation.

Sport Fan Sustainability Behavior Model

The Sport Fan Sustainability Behavior (SFSB) model (Trail, 2015, 2016) was based on a variety of theories and existing frameworks: Theory of Planned Behavior (Ajzen & Madden, 1986); the Attitude-Behavior-Context model (Guagnano, Stern, & Dietz, 1995); the Motivation-Opportunity-Ability model (MacInnis & Jaworski, 1989); Value-Belief-Norm model (Stern, Dietz, Abel, Guagnano, & Kalof, 1999); Identity Theory (Stryker & Burke, 2000); Constraint Theory (Crawford & Godbey, 1987; Kim and Trail, 2010); Model of Sustainability Behavior (Belz & Peattie, 2012); and Model of Sport Consumer Behavior (Trail & James, 2010, 2015). We are going to briefly examine each of these.

The core of the SFSB model is based on four aspects of the Theory of Planned Behavior (Ajzen & Madden, 1986). Ajzen and Madden (1986) hypothesized that attitudes lead to

intentions, which lead to behavior. In addition, they purported that subjective norms are a large component that also affect attitudes and intentions. The SFSB model includes all four of these aspects, with the subjective norms being subsumed within the Culture/Context construct of the SFSB. Similarly, the SFSB incorporates the Attitude-Behavior-Context model of Guagnano, Stern, and Dietz (1995), who claimed that attitudes and external conditions interact to cause behavior, and the model of Sustainability Behavior (Belz & Peattie, 2012), which depicted social and structural contexts influencing consumer factors.

However, these theories and models do not include the motivation behind the behavior, which is requisite in any good model. So, Trail (2015, 2016) incorporated Identity Theory (Stryker & Burke, 2000), the Motivation-Opportunity-Ability (MOA) model (MacInnis & Jaworski, 1989), and the Value-Belief-Norm (VBN) model of Stern, Dietz, Abel, Guagnano, and Kalof (1999) into the SFSB model to rectify this issue. The MOA model depicts that personal needs lead to motivation, which leads to evaluation of an object, but is moderated by ability and opportunity. Similarly, in the VBN sustainability model, personal values affect worldview (New Ecological Paradigm), which influences awareness of consequences of behaviors, and thus beliefs of responsibility for behaviors (attitudes). Trail (2015, 2016) took these ideas and melded them with the model of Sport Consumer Behavior of Trail and James (2012, 2015) and hypothesized that the Culture/Context of the environment affected both the external activation (awareness, interest, and evaluation) and the internal motivation (needs, values, and goals) of the individual, which in turn determined attitudes toward the sustainability campaign.

However, attitudes are also affected by prior loyalties and role identities. Stryker and Burke (2000), using their Identity Theory, hypothesized that values lead to identity importance and motives. In addition, they suggested that identity importance and identity salience lead to identity standard (role identities). All of these things, plus situational meanings, but primarily the role identities, lead to cognitive comparisons and affective responses (attitudes). Trail (2015, 2016) incorporated those ideas into the SFSB model and hypothesized that role identities (or points of attachment, which is a term that Trail and colleagues coined (Robinson & Trail, 2005; Trail, Robinson, Dick, & Gillentine, 2003)), also affected attitudes.

Trail (2015, 2016) also used the model of Sport Consumer Behavior of Trail and James (2012, 2015) and their use of Constraint Theory (Crawford & Godbey, 1987; Kim & Trail, 2010) to indicate that constraints would affect the relationships between attitudes and intentions and between intentions and actual behavior. Constraints are barriers to consumption or participation and reduce those intentions or behaviors.

Once the participant/fan has committed and actually participated in the sustainability campaign, she goes through cognitive and affect responses to that participation. These are the reactions and evaluations of the experience that will affect future attitudes, intentions, and behaviors. These relationships are supported by Belz and Peattie (2012) in their Model of Sustainability Behavior, who noted that use (or consumption) affects post-use behavior and reactions. Similarly, Trail and James (2012, 2015) suggested that after consumption, there is a confirmation or disconfirmation of expectancies about the consumption, which leads to an affect reaction (satisfaction or dissatisfaction, happiness or displeasure, with the experience) and then affects future intentions and repatronage behaviors.

In sum, based on all of the noted models and theories, Trail (2015, 2016) proposed the Sport Fan Sustainability Behavior Model. He hypothesized that Culture/Context influences both the perception of the external activation of the campaign (awareness, interest, and evaluation) and the internal motivation (needs, personality, values, and goals) of the individual. All of these

aspects interact to influence the attitude toward the sustainability campaign, along with the loyalty toward the sport organization brand (points of attachment). Attitude affects behavioral intentions specific to the campaign, which affect sustainable behavior specific to the campaign, but these relationships are moderated by constraints. Finally, sustainable behavior leads to the post-behavior reactions and evaluations specific to participating in the campaign.

Trail and McCullough (forthcoming) modified and tested a portion of the Sport Fan Sustainability Behavior Model with good success. They modified it to focus on participation in a leisure event (10-mile run) and eliminated the post-event portion of the model due to the cross-sectional nature of their project. Trail and McCullough also did not test the Culture/Context or the external activation part of the Trail (2015, 2016) in that particular paper. Thus, the model they tested looked like Figure 10.2.

Trail and McCullough (forthcoming) found that the data supported their proposed model. Specifically, they found that personal needs influenced values, which influenced attitudes toward the campaign. However, needs did not directly influence attitudes. Internal constraints had a negative relationship with attitudes toward the campaign. That is, constraints caused attitudes to become more negative toward the campaign. However, points of attachment had a positive influence on attitudes. As the participants were more attached/loyal, they had a much more positive attitude toward the campaign. Not surprisingly, as people’s attitudes improved, their intentions to participate in the campaign also increased.

Unfortunately, external constraints did provide barriers to participation in the campaign and decreased the likelihood of participation considerably. Past behaviors however, had a very small – almost negligible – positive influence on participation.

These results indicated that the model worked (at least this part of the model). However, Trail and McCullough (forthcoming) did not examine the specific relationships among the different components of each factor. That is, they did not investigate the impact of the specific needs, values, points of attachment, and constraints on specific campaign attitudes or intentions.

The Trail and McCullough (forthcoming) model shows the broad overview and is great in that the model fit the data supporting the theoretical model. However, that information only benefits the practitioner in the most general way. It does not help the practitioner apply the

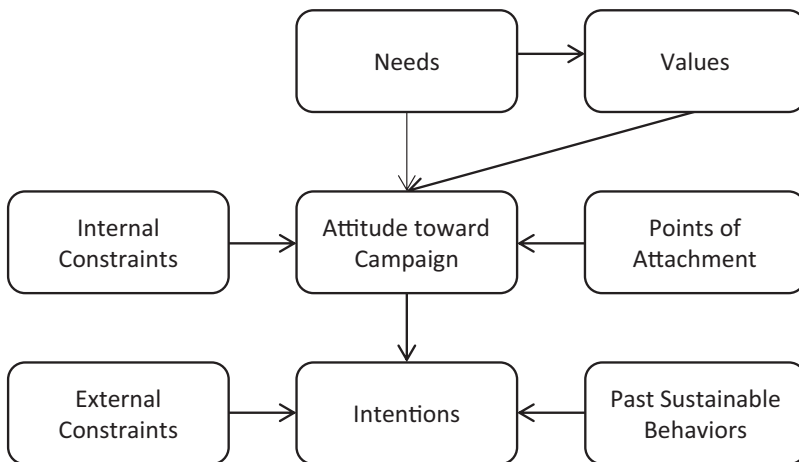


Figure 10.2 Sport Fan Sustainability Behavior Model

information to her own situation or show her how to do it. Thus, in the rest of this chapter, we show how to do that. We show:

- Where the participants were on the Sustainability Campaign Pathway
- How to create the market segments
- How to analyze the data
- How to interpret the results
- How to use the information to create campaigns.

The sample and the procedure for gathering the information is discussed in detail in Trail and McCullough (forthcoming), but the most important information is summarized here. With help from the sport organization (a non-profit organization that manages a running race), we collected information from over 700 participants in the run before they raced. We collected quite a bit of data, but the information relevant to this chapter included data about external activation (awareness, interest, and evaluation), internal motivation (needs and values), attitude toward the campaign, loyalty/attachment (to the brand, the sport, the environment, and the community), constraints (internal and external), prior behaviors, and future intentions.

First, we were able to show the client where their participants were situated on the Sustainability Campaign Pathway. We provided the client with a table and discussed each stage with the client (limited to the stages evaluated with the data of course). For example, we showed the client that 36.5 percent of the participants in the run had no knowledge of the run's sustainability campaigns to recycle their waste during the run or to purchase carbon offsets (if the participant was going to drive to the run instead of taking public transportation or walk/bike). However, once participants were aware of the campaigns, 88 percent of them liked the idea that the run was encouraging people to act sustainably. Even though 63.5 percent of people were aware of the campaigns, only 41.6 percent of the total were involved in the campaigns to a significant extent as evidenced by knowledge that the run had already obtained Gold Certification by the Council of Sustainable Sport. To assess the active consideration stage, we determined that only 43 percent of the participants were interested in purchasing carbon offsets in general (not specific to the race), but over 92 percent said that they would be interested in diverting their waste from the landfill in the future (again not specific to the run, but in general). Finally, we were also able to show the client that although there was general interest in carbon offsets in 43 percent of the people, only 32 percent intended to buy a carbon offset from the run (if they drove to the run). However, 93 percent did say that they would recycle all of their waste during the run when they ran it in the following week. Based on all of this information, we were able to help the client design a plan that would increase awareness of these two sustainability campaigns for the next run. In addition, the plan showed the client how to increase involvement, active consideration, and participation.

However, in order to help the client (the non-profit) better, we ran a cluster analysis to determine whether viable segments differed substantially enough to warrant creating multiple marketing campaigns in order to motivate each segment to increase their sustainability behavior (specifically in this instance, to increase carbon offset purchasing and increase waste diversion behavior).

Because we wanted to know differences on motivation for sustainability behavior, those were the variables that we included in the cluster analysis (motives, i.e., needs and values). The cluster analysis helped us determine that six viable (i.e., identifiable) segments were of sufficient size (i.e., substantial) to make it worthwhile to target. We also knew that these segments were accessible and responsive (see Trail, 2016, for market segmentation criteria) because they responded to our survey.

We named the six segments Social Justice Visitors (SJVs), Loyals (to the run), Unawares, Runners for Sustainability (RfSs), Conventionals, and Local Runner Cultures (LRCs). The six segments varied by their needs, values, external activation, constraints, past behaviors, their culture (demographics), and to a small extent their attitudes and intentions. Even though we were able to see that the six segments differed across these variables, that did not tell us whether the relationships among these variables were important (significant and meaningful). It is the relationships among the variables that allow us to provide recommendations to the client about how to create communications that will be effective for each segment.

Even though we had over 500 surveys in which all of the items were answered, because we ended up with six fairly equal-sized segments, for all but one of the segments, it would have been impossible to test the relationships using structural equation modeling (SEM). In addition, because we were much more interested in the specific relationships that would help the client create sustainability campaigns, we used correlations to examine the specific relationships among the items, although still within the framework of the model. Although we used correlations and we gathered cross-sectional data, we can still depict some of the relationships as predictive relationships (single-headed arrows) because of the theoretical basis of the model and prior empirical research that establishes some of these predictive relationships in other contexts.

For the client, and in the figures in this chapter (Figures 10.3–10.4), we only depicted the correlations greater than .3 because that indicates that there is at least a shared variance of 9 percent. Including smaller correlations that explained smaller amounts of variance would not be valuable to the client, and the return on investment (ROI) would not be sufficient to invest time, money, or effort on relationships that small. In fact, 9 percent may not be large enough in some instances as well.

Obviously, showing the client Figures 10.3 and 10.4 would probably confuse them more than help; therefore, we selected the information from those figures that would be most valuable in creating effective sustainability campaigns for that particular segment. We then created several much smaller and easier-to-understand figures that focus on one particular behavior for that segment and trace the antecedents to the behavior backwards, creating a figure that looks like this, for example (Figure 10.5).

However, the focus is not on the figure per se, although the figure is included for the client. Instead, we provide a written summary of what we found, specific to that small segment of the model. For example, the text that accompanies this figure is something like this:

What we found: *The more this group thought that carbon offsets (CO) for the run cost too much, the less likely they were to purchase CO in the future relative to the run. Luckily, the mean score for cost as a constraint (buying a CO from the run) was relatively low ($M = 3.0$; the lowest of all the segments). Also, as interest in purchasing carbon offsets in general increased, the more likely people in this segment intended to buy CO if they drove to the run in the future. In addition, as needs for family togetherness increased, interest in purchasing CO increased.*

This provided an overview of the findings in a way that people (the client) who may not have a statistical background can understand the information. It is not sufficient though. Just providing a summary of the results may not help the client understand how to apply the results to their specific organization. So we also include recommendations about how to implement the results within future sustainability campaign creation. The following is an example:

What we recommend: *Promote the low cost of buying a carbon offset from the run. Although this group was relatively aware of being able to purchase a carbon offset (65 percent)*

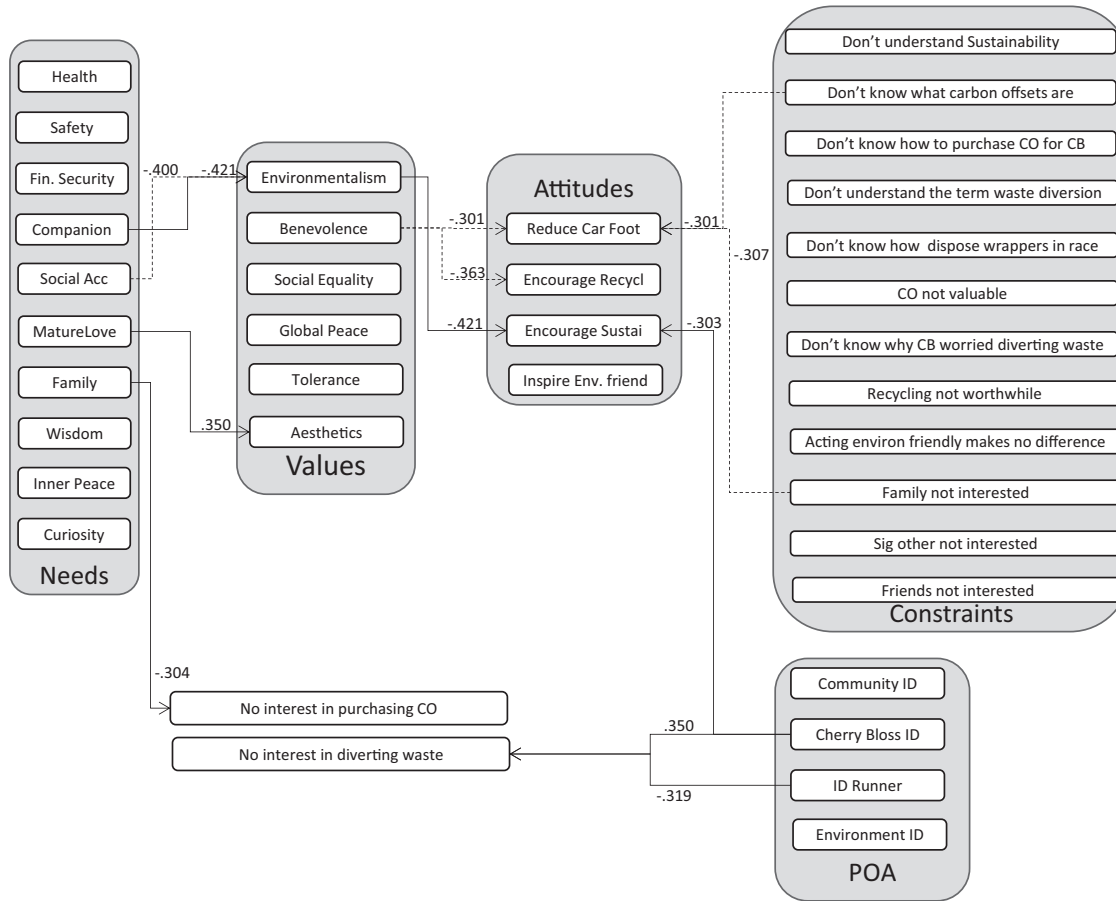


Figure 10.3 Cluster example for social justice segment

Note: The figures become too complex when all variables are depicted in one figure. Therefore, the model is split in two; that is why some variables will appear in both figures.

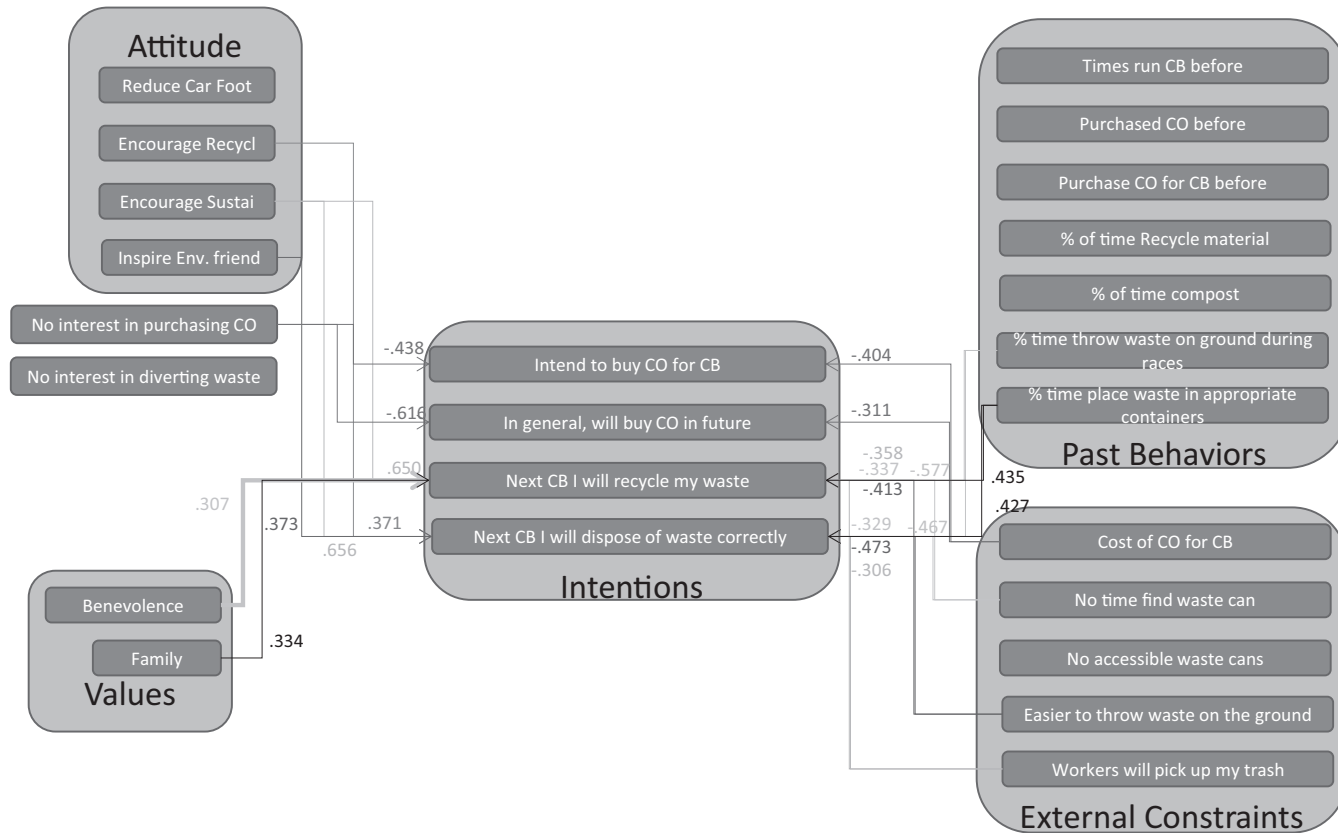


Figure 10.4 Additional cluster example of social justice segment

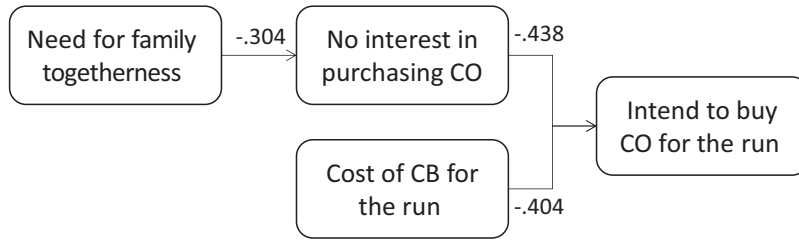


Figure 10.5 Simple example of antecedents to the behavior

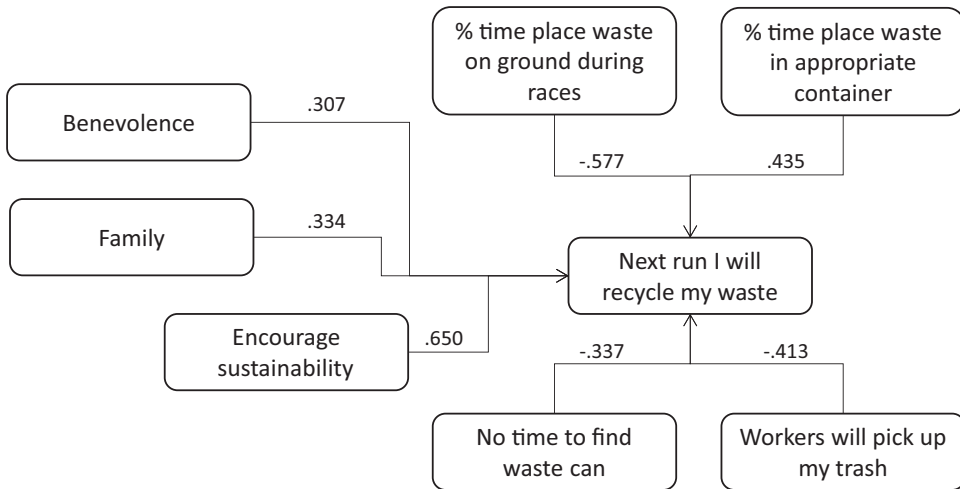


Figure 10.6 Complex example of antecedents to specific behavior

from the run, an easy fix for this issue is to communicate the low cost of doing so, even more than is currently done.

Second, in communications to this segment, really focus on how their family will really benefit from purchasing carbon offsets and reducing pollution.

The client can obviously choose to implement the recommendations or not, or perhaps our recommendations will initiate some ideas that could be implemented. Obviously, that was a fairly simple one to show the client and explain. Not all are as easy to explain. Here is one that is more difficult and complex (Figure 10.6).

Figure 10.6 again reflected the Social JusticeVisitors segment that we showed the client. Here are our findings and our recommendations:

What we found: Most of this group intends to recycle all of their waste the next time they participate in the run, but there are some constraints to them actually doing it.

- First, if they think that they don't have time to find a recycling bin, they are less likely to, but very few in this segment think that.
- Second, if they think that workers will pick up their trash, then this group is less likely to. About 50 percent think this.

Marketing sustainability through sport

- *Third, if they typically throw their waste on the ground when they run, they are less likely to recycle. However, only 9.3 percent of them do this.*

There are some positive motivators for recycling their waste though.

- *If they think that the run encourages people to act more sustainably, they are much more likely to recycle.*
- *If they have benevolence values (being kind and compassionate), they are more likely to recycle.*
- *If they have family togetherness needs, they are more likely to recycle.*
- *If they typically place their waste in appropriate containers when they run, they are more likely to recycle.*

What we recommend: *Because this group typically does not put their waste in the correct containers (93 percent of them), focusing on communications that promote how the run encourages everyone to act sustainably would help nudge that toward 100 percent participation.*

- *Second, messages focusing on how kind and compassionate it would be to recycle rather than throwing the waste on the ground, especially noting that it would really help the perceptions of the people who live or work along the route of the run.*
- *Third, communications that focus on how recycling would help families have a better world would work well.*

This information is the least amount of information that the client would get from us. Usually most clients would like more guidance on how to use this information in developing their sustainability campaigns.

Communication goals and KPIs

Going back to the Communications Strategy Wheel, we help the client use the insights gathered from the market research to create communication goals and key performance indicators for each market segment. As Trail (2016) pointed out, though, you cannot just use the market research to develop the communication goals and KPIs. They need to be framed within the business goals and marketing goals of the organization, but one of the easiest ways of creating communication goals is to use the Sustainability Campaign Pathway and the data that showed where each segment predominantly existed on the pathway. One potential communication goal would then equate to moving that segment to the next stage in the pathway. For example, with the Social Justice Visitor segment, we know that 71.2 percent of that segment was aware that the run attempts to be a sustainable race, which is pretty good considering that 42.3 percent had never participated in the run before. However, that same 42.3 percent had no idea that the run was trying to divert as much waste as possible away from landfills through recycling and composting. This lack of knowledge of this particular campaign by the run shows that a substantial portion of this segment could be moved to the awareness stage in the pathway by just educating them about this campaign. In addition, most of this segment was interested in diverting their waste in general (not specific to the run), so they would probably be amenable to that behavior during the run. We determined that this was the case as we found that a substantial majority would be willing to divert their waste and dispose of it correctly the next time they ran the run. Using this information and the other insights we gathered from the data we were able to help the clients establish specific communication goals for each of the market segments.

Moments of receptivity

After the communication goals and KPIs are established for each segment, we often work with the client to help them identify the moments of receptivity. As Solis (2015) posited, receptivity planning entails determining “micro-moments that help serve or aggregate peer content to move people along their path in real time at the right time at the right place through the right device” (p. 61). One way we helped the run determine moments of receptivity was to gather insight data referent to where each segment obtained most of their information about the run. With the Social Justice Visitors, we determined that about 35 percent of their information was obtained through the run’s website and 39 percent through emails. The former percentage was the lowest of any segment, whereas the latter percentage was in the middle of the other segments. However, we also determined that this segment was twice more likely than any other segment to obtain information through social media. Although this is only one small example of identifying a moment of receptivity, our data in this case did not go far enough because we did not ask about timing. However, you can see how the insight would be beneficial to the sport organization in determining which media to use when communicating with this particular segment.

Campaign architecture

Trail (2016) defined campaign architecture as the “the plan in which each customer (or fan) has the best experience possible at every touchpoint on the consumer pathway” (p. 207). To do this, it is necessary to take all of the data collected on each segment and identify the motivation for participating in the campaign and the constraints to participating at each point on the pathway. For the Social Justice Visitors segment, the biggest constraint for a portion of this segment was a lack of awareness of the two campaigns. Obviously, if that constraint was removed, then the entire segment would at least be at stage 1 of the pathway. However, we also knew that if we could get them past this stage, they were very interested in diverting their waste during the run. In addition, we knew that they were motivated by Benevolence values and Family Togetherness needs. Thus, by incorporating that information in the communications with this segment, we could motivate them to participate even more. Finally, we also determined that we needed to eliminate the perceived external constraint that they didn’t have time to find a recycle or compost can and that we needed to eliminate the perception that if they did throw their waste on the ground, that volunteers would pick it up. So taking all of this information we could create a plan that addressed these issues at each step on the pathway and communicated with these individuals every step of the way. This latter part, the communication part, is called idea amplification.

Idea amplification

Wiltshire (2015) suggested that idea amplification “happens when your content is shared, either through organic or paid engagement, within social marketing channels thereby increasing your word-of-mouth exposure” (para. 4). Trail (2016) noted that amplification might occur in different ways at different stages on the pathway. So, based on the data we gathered and the customer insights we obtained, for the Social Justice Visitors segment we determined that the initial amplification needs to come through the run’s website. At the next stage of the pathway, this segment received a lot of information through social media sites, but once involved and in the active consideration stage, amplification needed to come through email.

Activating the plan

Trail (2016) noted that activating or implementing the plan refers to “how strategies are executed through media solutions and how the activation ideas are brought to life” (p. 219). He continued, suggesting that the plan needs to be operationalized, thus creating a “blueprint that details all of the processes, the activities, and the materials that are needed to support achieving the communication and marketing goals” (p. 220). This process is something that takes a bit of time, and most sport organizations rarely have, or take, the time to do a comprehensive job of this, but they really need to do so. This involves melding all of the plans for each of the market segments into a comprehensive whole (see Trail (2016) for an example, pp. 222–228). If, like in the case of the run, the volunteer staff does not have the time or inclination to do this, it typically does not get done. This is where academics and other entities can help by using their expertise and provide students in their programs opportunities for an excellent learning experience.

Summary

In summary, the sport industry has engaged in environmental sustainability for several years now. However, the evolution, specifically the sophistication, of these initiatives has been lacking (McCullough et al., 2016). Prior research has explored ways to evaluate the influences of sport spectator sustainable behaviors at events, but there has not been a specific way to evaluate sustainability campaigns until Trail’s work in this specific area (Trail, 2015, 2016; Trail & McCullough, forthcoming). Building upon his work this chapter takes the next step to advance the communication strategies to market sustainability campaigns and encourage sustainable behaviors. We found that specific fan segments can be identified based on their values, attitudes, behaviors, and psychographics. Identifying these specific segments allows for sport managers to create marketing campaigns that help advance each individual along the Sustainability Campaign Pathway to achieve the objectives of a sustainability campaign. This chapter outlines the parameters for sport managers to approach the development of their sustainability efforts and campaigns from a knowledgeable and strategic approach. Further, the SPSB model and fan segmentation can help evaluate the effectiveness of initial strategies to provide insight to the success and necessary improvements to advance the organization’s sustainability campaigns.

References

- Ajzen, I., & Madden, T. J. (1986). Prediction of goal-directed behavior: Attitudes, intentions, and perceived behavioral control. *Journal of Experimental Social Psychology*, 22, 453–474.
- Belz, F.-M., & Peattie, K. (2012). *Sustainability marketing* (2nd ed.). West Sussex, UK: John Wiley & Sons Ltd.
- Casper, J. M., & Pfahl, M. E. (2012). Environmental Behavior Frameworks of Sport and Recreation Undergraduate Students. *Sport Management Education Journal*, 6, 8–20.
- Casper, J. M., Pfahl, M. E., & McCullough, B. P. (2014). Intercollegiate sport and the environment: Examining fan engagement based on athletics department sustainability efforts. *Journal of Issues in Intercollegiate Athletics*, 7, 65–91.
- Casper, J., Pfahl, M., & McCullough, B. P. (2017). Is *going green* worth it? Assessing fan engagement and perceptions of athletic department environmental efforts. Submitted to *Journal of Applied Sport Management*, 9(1), 106–134.
- Casper, J., Pfahl, M., & McSherry, M. (2012). Athletics department awareness and action regarding the environment: A study of NCAA athletics department sustainability practices. *Journal of Sport Management*, 26(1), 11–29.
- Crawford, D. W., & Godbey, G. (1987). Reconceptualizing barriers to family leisure. *Leisure Sciences*, 9, 119–127.

- Guagnano, G. A., Stern, P. C., & Dietz, T. (1995). Influences on attitude-behavior relationships: A natural experiment with curbside recycling. *Environment and Behavior*, 27, 699–718.
- Hopwood, B., Mellor, M., & O'Brien, G. (2005). Sustainable development: Mapping different approaches. *Sustainable Development*, 13(1), 38–52.
- Kim, Y. K., & Trail, G. T. (2010). Constraints and motivators: A new model to explain consumer behavior. *Journal of Sport Management*, 24, 190–210.
- Kim, Y. K., & Trail, G. T. (2011). Factors influencing spectator sport consumption: A case of NCAA women's college basketball. *International Journal of Marketing and Sponsorship*, 13(1), 60–82.
- MacInnis, D. J., & Jaworski, B. J. (1989). Information processing from advertisements: Toward an integrative framework. *Journal of Marketing*, 53, 1–23.
- Martin, N. T., Ross, S. R., & Irwin, R. L. (2015). Utilizing community-based social marketing in a recycling intervention with tailgaters. *Journal of Intercollegiate Sport*, 8(1), 57–81.
- McCullough, B. P. (2013). Identifying the influences on sport spectator recycling behaviours using the theory of planned behaviour. *International Journal of Sport Management and Marketing*, 14(1), 146–168.
- McCullough, B. P., & Cunningham, G. B. (2010). A conceptual model to understand the impetus to engage in and the expected organizational outcomes of green initiatives. *Quest*, 62(4), 348–363.
- McCullough, B. P., & Cunningham, G. B. (2011). Recycling intentions among youth baseball spectators. *International Journal of Sport Management and Marketing*, 10, 104–120.
- McCullough, B. P., & Kellison, T. B. (2016). Go green for the home team: Sense of place and environmental sustainability in sport. *Journal of Sustainability Education*, 11(February), 1–14.
- McCullough, B., Pfahl, M., & Nguyen, S. (2016). The green waves of environmental sustainability in sport. *Sport in Society: Cultures, Commerce, Media, Politics*, 19(7), 1040–1065.
- Robinson, M., & Trail, G. T. (2005). Relationships among spectator gender, motives, points of attachment, and sport preference. *Journal of Sport Management*, 19, 58–80.
- Solis, B. (2015). *X: The experience when business meets design*. Hoboken, NJ: John Wiley & Sons, Inc.
- Stern, P. C., Dietz, T., Abel, T. D., Guagnano, G. A., & Kalof, L. (1999). A value-belief-norm theory of support for social movements: The case of environmentalism. *Human Ecology Review*, 6, 81–97.
- Stryker, S., & Burke, P. J. (2000). The past, present, and future of an identity theory. *Social Psychology Quarterly*, 63, 284–297.
- Trail, G. T. (2015). Marketing sustainability through sport organizations. In B. P. McCullough (Ed.), *Introduction to environmental sport management* (pp. 81–101). Seattle, WA: Forwarding Sport Sustainability, LLC.
- Trail, G. T. (2016). *Marketing sustainability through sport*. Seattle, WA: Sport Consumer Research Consultants LLC.
- Trail, G. T., & James, J. D. (2012). *Sport consumer behavior*. Seattle, WA: Sport Consumer Research Consultants LLC.
- Trail, G. T., & James, J. D. (2015). *Sport consumer behavior* (2nd ed.). Seattle, WA: Sport Consumer Research Consultants LLC.
- Trail, G. T., & McCullough, B. P. (forthcoming). *Marketing sustainability through sport: testing the Sport Participant Sustainability Behavior Model*. 1–17.
- Trail, G. T., Robinson, M., Dick, R., & Gillentine, A. (2003). Motives and points of attachment: Fans versus spectators in intercollegiate athletics. *Sport Marketing Quarterly*, 12, 217–227.
- Wilshire, C. (2015). *Social amplification part 1 of 3 – what is social amplification*. Retrieved from www.gshiftlabs.com/social-media-blog/social-amplification-part-1-of-3-what-is-social-amplification/
- Young, A. (2010). *Brand media strategy: Integrated communications planning in the digital era*. New York, NY: Palgrave Macmillan.

USING SUSTAINABILITY TO ATTRACT NEW SPONSORSHIPS

Lana L. Huberty

In 2000, the U.S. Green Building Council (USGBC) launched the Leadership Energy and Environmental Design system, known as LEED. The LEED classification consists of a certification rating system that examines facility design, construction, and operation by which a facility could qualify for one of four certification levels: Certified, Silver, Gold, or Platinum (see usgbc.org/leed). The rating system was designed with the five credit categories of sustainable sites, water efficiency, energy and atmosphere, materials and resources, and indoor environmental quality, with bonus points offered for innovation and design. Since its inception, LEED has become an internationally recognized green building certification system providing third-party verification that a building integrates environmentally friendly strategies (Mallen, Adam, Stevens, & Thompson, 2010; see Chapter 16 for more details on environmental building certification).

As facility managers often rely on public funds to build and operate venues and programs, there remains an inherent obligation to the local communities to operate in a fiscally responsible manner through the appropriate use of tax dollars. This puts enormous pressure on managers to be both environmentally and fiscally responsible (Raiborn, Payne, & Joyner, 2013; Dittmar, 2010). Over the last decade, facility managers experienced these pressures and, in response, several have invested in environmentally friendly projects by building venues that meet LEED certification guidelines. This commitment adds financial demands as facility managers invest resources to meet environmental standards.

In response to the pressures of fiscal responsibility, facility managers seek techniques to offset the investment of green initiatives like LEED. Along with traditional revenue sources of ticketing and membership sales, sponsorship sales emerged as a potential revenue-generating method. With the uniqueness of the LEED certification adoption in the sport venue context, little experience and shared knowledge exist on how an investment in a LEED certification could be used to entice sponsorships. The lack of knowledge offers a challenge to sport marketing professionals. Green initiatives, such as LEED, offer branding opportunities on which marketing professionals may be able to capitalize upon when seeking facility and event sponsorships. This opportunity is the focus of this chapter.

Review of literature

To gain a deeper understanding of the branding opportunity a LEED certification offers within the sponsorship solicitation process, sport marketing literature was explored. Specific topics

included green marketing trends, cause-related marketing, sport sponsorships, sponsor fit, and brand management.

Green marketing trends

Companies have traditionally viewed conservation as a balancing act between protecting the environment and pleasing shareholders. The research model used by Feldman, Soykam, and Ameer (1997) compared 327 company environmental initiatives and stock returns. Companies that demonstrated environmental initiatives often experienced financial improvement. In these cases, investors generally believed a green company was less likely to cause environmental damage or be sued for similar actions. Evidence confirmed that the market rewarded activities that reduced a company's risk profile and positively affected the company's financial health. In other words, green companies were viewed as less risky investments. Further research by King and Lenox (2001) found similar evidence of environmental performance correlating with financial performance. The authors pointed out, however, that the benefits of improved environmental practices and performance did not flow to companies automatically. Rather, managers needed to inform the market that they were working to reduce their impact on the natural environment by advertising, issuing reports, and providing detailed information on the company's Internet site.

Choosing to adhere by environmentally friendly standards also offers an organization the potential to decrease operating costs, differentiate, or revitalize itself (Polonsky & Rosenberger III, 2001). The greenness of a product can create added value which companies recognized along with the strategic opportunity it presented. Understanding corporate motivations and pressures for going green was necessary in shaping the green marketing process and in determining how it was to be implemented. Strategic environmental activity often meant an extensive long-term financial commitment. Green promotion communication focused on the substantial environmental information with real, meaningful activities. The information was educational, enabling consumers to make more effective decisions based on the green information offered. Research on purchase intentions generated interest in a green marketing study by Brownlee, Huberty, Shreffler, Yoo, and Brown (2012). Here, student attitudes toward green purchases were utilized as a measure of consumer opinion related to buying green products. Researchers found that a positive attitude towards green purchases (AGP) increased green purchase intentions and green product usage (Chen & Zhang, 2011; Kim, Kwak, & Kim, 2010; Chan, 2001; Alwitt & Pitts, 1996). Therefore, an increase in consumer awareness of an organization's environmental efforts was an essential component of the marketing strategy because it often correlated with consumer behaviors.

Raising this awareness of environmental practices and performances among consumers involved multiple communication strategies such as mailings, email notices, newspaper articles, posters, stickers, class room presentations, and guest speakers (Simpson, 2003). An alternative idea involved the installation of a sign within the entrance of the LEED-certified building that provided data on annual energy savings and costs. Often the high dollar amounts posted on the signs shocked people and spurred conversations on conservation. This reinforced the importance of green marketing strategies offering opportunities for companies to use a social issue (e.g., the environment) to advance their marketing exposure and public relations efforts through a cause-related marketing (CRM) strategy. By embracing green initiatives through the adoption of green standards, organizations were able to target market consumers mutually interested in preserving the environment (refer to Chapter 11 for addressing various fan segments related to environmental messaging).

Cause-related marketing

Cause-related marketing is a strategy an organization uses to associate itself with a good cause. The cause can be purely altruistic or may serve the organization's self-interest and image. Such investment in a specific causes continues to grow with monetary reports marking the integration of social issues into many organizations' marketing plans, as well as the economic impact CRM has on corporations' finances (Kim, Kwak, & Kim, 2010).

Several factors have led to an increased employment of the CRM strategy for promoting sport facilities. First, the increase in public environmental attentiveness has encouraged organizations to develop relationships with specific causes (Mallen et al., 2010; Lachowetz & Gladden, 2003; Roy & Graeff, 2003). Furthermore, as government funding for facility development declined, new sources of revenue were pursued with a focus on green initiatives. To better understand green marketing, researchers identified key strategic concepts and examined their effectiveness (Ginsberg & Bloom, 2004). Keys to green marketing began with the marketing mix and the fact that consumers were not likely to compromise on traditional product attributes such as convenience, availability, price, quality, and performance. The second key concept of green marketing identified was the non-existence of a single green marketing strategy that worked perfectly for all companies. Managers who understood the variety of individual marketing strategies and the motivations behind each of them were better prepared to help the organization benefit from green marketing approaches. Proper research and preparation enabled businesses to effectively communicate information on the environmental impact outcomes of their facilities and services (Ginsberg & Bloom, 2004).

Lachowetz and Gladden (2003) recognized the essential need for a strategic framework for managing sport CRM. Based on CRM research and branding theory, three conditions were deemed necessary for understanding CRM and for producing intended outcomes within a sport context: enhanced brand image, enhanced brand loyalty, and consumer brand switching. To manage CRM successfully, the commitment to the cause needed to be evident throughout the corporation. If the consumer perceived a superficial commitment by the corporation, the CRM efforts were unsuccessful. The uniqueness of CRM within the sport context was termed cause-related sport marketing. Cause-related sport marketing was also analyzed through a structural model that measured perceived CRM, team image, and the re-attendance intentions of 310 volunteers (Kim, Kwak, & Kim, 2010). Findings on consumer perceptions of CRM and how the perceptions affected re-attendance intention showed a relationship between perceived CRM and attitudes toward the team. When the fans viewed the CRM actions of the team as positive and true, there was an increase in their re-attendance intentions.

Sport CRM is exemplified by the commitment of New Balance Athletic Shoe, Inc., to the Susan B. Komen Breast Cancer Research Foundation. This support came largely in the form of a sponsorship for the Komen Race for the Cure series of 5K races and walks. These events occur in more than 100 U.S. cities, affecting millions of lives. Another sport CRM illustration is FedEx's ongoing commitment to the St. Jude Classic professional golf tournament. An examination of attitudes, beliefs, and purchase intentions of consumers suggested that their purchasing intentions toward the sponsoring company, FedEx, were positively affected by the corporation's involvement with CRM strategies (Irwin, Lachowetz, & Cornwell, 2003). A CRM benefit for the sponsor included increased financial performance, as consumers revealed that they prioritized buying from a company that made charitable contributions. CRM can be witnessed within professional sports as well with Chevrolet's commitment to FIFA's One World Futbol project and the Women's National Basketball Association (WNBA) corporate partnership with Sears. Sears teamed up with the WNBA KidBeat Reporter program which targets moms, media,

and Sears' internal team to enhance the presence of women in sport. Although these CRM collaborations between sport organizations and business are noteworthy, they do not offer specific insight into environmental sustainability CRM efforts within sport. This lack of literature confirmed the 2013 gap as identified by Chard, Mallen, and Bradish (2013).

Through the review of LEED-certified sport facility examples a number of CRM initiatives were discovered. By embracing green initiatives during facility construction and operation phases, marketers are offered new avenues for promoting their venues. Marketing the facility to fans, members, and sponsors offers various revenue sources. Specific to sponsorship revenue, green features may be viewed as influential in attracting and securing sponsors. Sponsorship – specifically the idea of sport sponsorship – is explored next.

Sport sponsorship

Sport sponsorship features the strategic role of sponsorship usage in a sporting context (Dolphin, 2003). The sport sponsor investment, whether cash or in-kind, involves an activity in return for access to the exploitable commercial potential associated with that activity (Meenaghan, 1991). This relationship between the sponsor and sport organization is highly synergistic and involves strategic collaboration and mutually beneficial outcomes (Farrelly, 2010) which entail goodwill and philanthropic intentions (Copeland, Frisby, & McCarville, 1996). Sport sponsorship is a recognized corporate marketing tool that has been integrated worldwide into many events, competitions, and individual activities.

Evidence of sponsorships in sport has existed, in one form or another, since the days of ancient Rome in 65 BC (Arthur, Scott, & Wood, 1997). The popularity of sport sponsorships has progressively increased with the 2015 report from *The Statistics Portal* stating that 69 percent of all sponsorships are sport related. Sport sponsorship agreements range from the provision of Little League uniforms to the funding of professional sport arenas. Researchers have highlighted the important role sponsorship plays within the sport marketing industry when it comes to offering sponsors the unique opportunity to generate publicity, alter public perceptions, increase brand awareness, enhance brand image, and reach new markets.

Huberty (2013) explored the potential sponsorship solicitation opportunities for LEED sport facility marketers. Twenty-one sport marketers of LEED-certified facilities were interviewed on their promotion of LEED in the solicitation of sponsors. The majority of the participants felt the use of LEED certification as a marketing tool offered a unique opportunity to reach sponsors, but were unsure as to how to approach this idea. Best practice recommendations of facility marketers for sponsorship solicitation strategies that utilized LEED were collected, compiled, and presented to assist in future strategic marketing plans (Huberty, 2013).

Finding the right sponsor

Finding and educating the right sponsor for a green facility is important for several reasons. Mendelson and Polonsky (1995) found consumers integrated their concern for the environment into their purchasing behavior, such as buying products and services based on their impact on the environment. The integrated behavior remained consistent even when the consumer had to pay more. Research by Barone, Miyazaki, and Taylor (2000) and Roy and Graeff (2003) confirmed that the benefit of supporting causes was reflected in consumer purchase intentions of the firm's products and services. However, research on the utilization of CRM as a marketing strategy has generated a mix of consumer responses. Consumers either viewed the use of CRM by an organization as supportive to the cause or as exploitative. Corporate involvement

in CRM being viewed as altruistic has been found to be central to consumer responsiveness and purchase intentions (Barone et al., 2000). Having the corporate connection to the CRM viewed as altruistic by consumers was integral to affecting consumer choices.

Although CRM strategies have often been contingent on corporate interest in a social cause, CRM actually threatened true sentiments when there was not opportunity for real moral engagement (Smith & Higgins, 2000). Further, the nature of the ethical commitment produced by CRM needed to be separated from the benefits that were generated (i.e., financial incentives) creating a need for a careful balance between the corporation and the social issue (Polonsky & Wood, 2001). Mission statements and core values played a major role in this process where corporations looked to events that aligned with their core values and philosophies (Cunningham, Cornwell, & Coote, 2009). A study on the role of gratitude in spectator sport sponsorships concluded that feelings of gratitude resulted in higher consumer purchase intentions (Kim, Smith, & James, 2010). If consumers believed the motives of the sponsor were altruistic, they experienced a greater sense of gratefulness towards the sponsor. The beneficiary's perception was found to be an important antecedent of gratitude, which stresses the importance of understanding how to successfully generate gratitude and perceived value. The accelerated sense of gratitude correlated with higher consumer purchase intentions of the sponsor's products.

As such, when seeking sponsors for sport organizations, pursuing those corporations with demonstrated social awareness increased the chances of corporation commitment (Sarni, 2009). A "good fit" corporation would be one which viewed these sport sponsorships as an opportunity to demonstrate social responsibility and a commitment to green business. Some corporations have green initiatives that align with the connection to a green facility, whereas others may not. This information would be of obvious value to a sport facility marketer looking to align themselves with potential sponsors interested in environmental sustainability. Making sure the sponsor role models greenness is also important. However, prior to seeking out the right sponsor, a facility marketer should identify the green amenities offered within the venue and be able to detail the exact savings these amenities provided. Knowing and fully understanding what a LEED certification entails, the green features involved, and the cost-benefit analysis for facility operations is the first step in being able to determine potential sponsors. Once a sport facility marketer had these details, then the search for an appropriate sponsorship fit could begin. Such was the process for organizers of the London 2012 Olympic and Paralympic Games, who successfully leveraged their sustainability initiatives to attract and engage sponsors (e.g., Hartnett & Stubbs, 2012; London Organising Committee of the Olympic Games and Paralympic Games Ltd., 2012; McFarlane, 2012).

Uecker-Mercado and Walker (2012) investigated drivers of environmental social responsibility participation. For the purpose of this study, 15 sport facility managers were interviewed on the five drivers behind engagement in environmental social responsibility: internal stakeholder pressure, organizational culture, financial cost-benefit, competitiveness, and ethical motives (Uecker-Mercado & Walker, 2012). Organizational stakeholders were those who set goals and objectives, allocated resources and responsibilities, gathered data, and analyzed results. Pressure from this group was identified as a major driving force behind environmental social responsibility of facility managers. Second, organizational pressure focused on the set of internal policies, values, and beliefs that influenced management commitment to environmental sustainability initiatives. Similarly, based on financial cost-benefit, if facility leadership determined financial benefits could be derived from engaging in environmental social responsibly, they were more apt to comply with the green initiatives. The fourth driver, competitiveness, tied more to image than to financial gains, although the facility managers did believe that a better image would result in higher earning potential by appealing to clients and customers who demand a certain level of

environmental social responsibility. The final driver behind engagement in environmental social responsibility was ethical motives, defined simply as practicing environmental sustainability was the right thing to do. When a venue manager chose to engage these drivers, a culture of environmental social responsibility was created.

These recent findings help define the true motivations behind the facility LEED investment commitment being made by facility management team members. These motivations could be applicable to future sponsorship motivations for participation in environmentally sustainable actions. Facility managers need to understand their facility's green amenities, as well as the interests potential sponsors have in reducing their own environmental impact. Simply stated, being able to communicate the benefits of sponsoring an environmentally friendly venue involves CRM strategies.

Brand management

LEED certification brings with it a brand, a distinct name highly recognized and renowned (Ross, 2006). From a corporate financial perspective, brand equity has been defined as the incremental cash flow resulting from a product with a brand name versus the cash flow that would result without the brand name (Leuthesser, 1988). Raising brand awareness was used for stimulating the sales of products and services and leveraging corporate reputation (Dolphin, 2003). Research determined that favorable brand equity increased the probability of brand choice, consumer retention, profit margins, willingness to pay premium prices, consumer search, marketing communication effectiveness, positive word of mouth, brand licensing opportunities, and brand extensions. Furthermore, brand equity decreased vulnerability to competitive marketing actions and elastic premium prices (Aaker, 1996).

Huberty (2013) determined that once a facility achieved a LEED-certified status, managers had a unique opportunity to use the LEED brand as a marketing tool. A facility manager who recognized this opportunity and understood both the CRM and corporate social responsibility (CSR) concepts could work to link these into the marketing strategies for sponsors, fans, and members. Brand strategies may incorporate the more well-known name "LEED" to potentially draw attention to the facility and create a sense of connectedness with the environmentally conscious consumer.

To summarize, with the growth in LEED-certified sport facilities along with tighter budgets and the challenging economic climate, facility managers need to maximize marketing strategies. LEED certification and green initiatives may offer branding opportunities on which sport facility marketing professionals can capitalize when seeking sponsorships. The earlier literature review highlighted the scholarly research conducted to assess green marketing strategies necessary to gain a better understanding of sponsorship solicitation for a LEED-certified sport facility.

Theoretical significance

The growing attention to sport sponsorship piqued the interests of sport researchers hoping to advise marketers on how to best attract sponsors. To be successful, sport marketers first need to understand how corporations view and assess sponsorship opportunities. This process involves obtaining knowledge of theoretical concepts used to study the effectiveness of past sponsorship deals and to guide future sponsorship solicitation strategies. Through multi-promotional campaign strategies, relevant theories including exchange theory, congruency theory, and social identity theory have emerged and been applied to a sporting context.

Exchange theory

Exchange theory was established on three basic principles by McCarville and Copeland (1994). The first principle, rationality, is characterized by an action being directed toward specific goals or rewards. The action is typically selected from various potential alternatives and the response is impacted by both positive and negative variables. Rationality suggests that partners seek valued outcomes and that the individual identity of each partner influences these values. The second principle of exchange theory is marginal utility, which refers to the relationship between access to rewards and the value assigned to them. Similar to the relationship between supply and demand, as rewards became more accessible and regular, the recipient's perceptions of the value of these rewards decreases. Fairness, the third principle of this theory, notes how distribution of resources and rewards is critical to the maintenance of any exchange relationship. Partners are more likely to continue participation if they believe the resources and rewards are being allocated in a fair manner. To persuade someone to take part in an exchange, the consumer must believe the benefits of adopting behaviors outweigh the costs of the purchase.

Chadwick (2006) focused on the management and commitment of football shirt sponsors. Employing a mixed methods approach, numerous variables were used to gauge a sponsor's commitment, including communication, relationship benefits, location, trust, shared values, and the perception of each other's commitment. The three most important items identified as being statistically significant in determining a sponsor's commitment were shared values, perceived benefits, and opportunistic behavior. Thwaites (1994) had cautioned that members of the public may perceive sponsorship as advertising and question the true commitment behind the sponsorship (e.g., greenwashing; see Chapter 25). Chadwick (2006) offered guidelines on how to avoid this negative perception through the establishment of a sponsor-sport link that demonstrates shared values.

Farrelly (2010) approached sponsorship research from a distinctive viewpoint by investigating 24 sport administrators' explanations for terminated sponsorship deals. Interview and case study results demonstrated that a successful sponsorship generated value for the sponsor with a focus on strategic management. Strategic management entails objective setting, activation, and evaluation as major contributors to a successful sponsorship relationship. Each of the factors identified traces back to issues relative to sponsors' rights. Addressing different viewpoints and articulating sponsorship rights provided further insight through Copeland et al.'s (1996) study. Here, researchers focused on terminations from the corporate sponsors' viewpoint. Corporations were surveyed about sponsorship contracts that they had chosen to terminate. The number-one reason for termination was that the sponsor felt the sponsorship agreement was of little value offering an inadequate return on the investment.

The sport marketers interviewed in Huberty (2013) stressed understanding how corporations viewed and assessed sponsorship opportunities which involved the basics underlying exchange theory. LEED was viewed as a symbol of organizational commitment to green initiatives and environmental sustainability. The application of exchange theory recognizes the role potential sponsor perceptions played in building relationships with the sport organization as well as members, fans, and consumers. For marketers of green sport facilities, it was critical to determine if the targeted sponsor's values involved environmental sustainability and then, when appropriate, frame a sponsorship campaign around these values. Research of potential sponsors' assisted in understanding what incentives, such as a LEED, should be advertised. Considering the sponsor's specific interests enabled the marketing team to design a product and a message promotion that appealed to the sponsor's pre-existing environmental sustainability values. The

findings from these studies firmly support the underlying concepts of exchange theory and highlighted the importance of understanding the theory to ensure a successful sponsorship relationship. In addition to exchange theory, evidence of congruency theory is often found in sport sponsorship research, as discussed further next.

Congruency theory

Congruency theory is often used in sport sponsorship research along with terms such as “matching,” “brand cohesiveness,” and “fit.” A 2009 brand personality study by Lee and Cho explored brands and sport events which were congruent, or fit best together. This study attributed five human personality traits to various products and services: sincerity, excitement, competence, sophistication, and ruggedness. Researchers found that these traits could also be applied to sport events because events, similar to products and services, had their own personality characteristics. These characteristics were found to transfer to the sponsored brand. When the brand and sport event were matched appropriately, sponsorship effectiveness was maximized. If the associated brand image and the sport event were mismatched with the lifestyles and interests of a target market, the sponsor failed to reach targeted consumers and convey the intended message (Crimmins & Horn, 1996). When congruency theory was applied, it was suggested that consumer reactions were influenced by how the consumers perceived the fit between the sporting event and the sponsoring brand. Applying congruency theory, the authors examined brand and event matches. It was determined that brands would benefit more through a sport event sponsorship that was consistent with the brand’s personality (Lee & Cho, 2009). Personality congruency between a sport event and sponsoring brand was linked to favorable attitudes for the brand sponsoring the event. These favorable attitudes led to higher purchase intentions of the sponsoring brand products by consumers.

Additional application of congruency theory was utilized by Gwinner and Eaton (1999), who established that individuals exhibit a bias toward sponsoring brands that are related to sports events. Additionally, the researchers demonstrated that identifying and aligning with groups that have positive qualities can enhance one’s self-esteem. In an effort to better understand the variables affecting perception of brand fit in sponsorship, Gwinner and Bennett (2008) researched attendees of the Dew Action Sports Tour, who were asked to assess the perceived fit through the two constructs of brand cohesiveness and purchase intentions. The assessment used concepts from social identity theory which is the perceived oneness with, or connectedness to, a group of people (Mael & Ashforth, 1992). Sport identification was viewed as a specific instance of social identification whereby the object that one identified with was a particular sport (Gwinner & Bennett, 2008). Among the variables examined, perceived sincerity of the sponsor had the highest correlation with the sponsor–event fit construct. Sincerity involved viewing the sponsorship motives as altruistic rather than exploitative. Brand cohesiveness led to greater brand knowledge, which resulted in a greater ability to see dimensions common to the event and the brand. The end result provided insight to a better sponsor–event fit.

A FIFA World Cup match with multiple sponsors was the center of a study by Chavanat, Martinent, and Ferrand (2009). Consumers were asked to list their perceptions of the event sponsors. Using the data collected and analyzed, a structural model was developed to analyze the three constructs of consumers’ perceptions of brand image, brand attachment, and purchase intentions of fans in response to multiple sport event sponsorships. These findings stressed the importance of sport marketers having a good understanding of fans’ behavioral perceptions to optimize a multiple sponsor arrangement (Chavanat et al., 2009).

As discussed previously, CRM refers to the strategy an organization uses to associate itself with a good cause. When applied to the matching of a sponsor and a sport organization, congruency

theory suggests that sponsor reactions are influenced by how the sponsor perceives the fit. Through exploring the matching effects of the LEED brand with sporting venues and potential sponsors, congruency theory has been applied to find which of these partners are congruent, or fit best, with each other (Huberty, 2013). Again, through research and an examination of the sponsor and sport organization's objectives, a marketer could apply congruency theory concept within the solicitation process.

Social identity theory

Additional insight into congruency theory can be found in related research conducted on the use of social identity theory. Social identity theory is the belief that people define themselves in terms of a membership within social categories (Tajfel & Turner, 1979; Wann, 1995). Sport studies have determined that CRM strategies affect consumer attitudes, beliefs, and purchase behaviors, but these outcomes are also influenced by other factors such as team identification (Lee & Ferreira, 2011).

Researchers have sought to understand the degree to which factors such as team identification relate to CRM. In Lee and Ferreira's (2011) study on sports sponsorships, team identification affected the relationship between CRM and the consumer's choice of team-licensed products (Lee & Ferreira, 2011). Study participants with low team identification preferred team-licensed products that supported companies involved in CRM. However, participants with high team identification failed to consistently support CRM efforts. Instead, the group with the higher team identification was mostly driven by a desire to purchase a product from the team to which they felt most connected. Furthermore, it was shown that even individual fans with low team identification were willing to purchase a product if they felt it supported an organization about which they cared. The social identity membership held emotional and value significance for each individual and directly impacted the CRM result. Through the application of social identity theory to CRM initiatives, the purchase intentions of sporting participants are better understood. Trail, Anderson, and Lee (2006) explored the relationship between factors which influence one's social identity (i.e., fan loyalty and future intentions to attend games) to include team identification, sport fan motivations, and enjoyment.

Based on the practical recommendations offered by marketing professionals to successfully solicit sponsors for LEED-certified sport facilities, exchange, congruency, and social identity theories should be integrated into the sponsorship solicitation process (Huberty, 2013). These sentiments support previous research presented throughout this section. Attention to the theoretical concepts adds insight into how these concepts enhance the understanding behind cause-related marketing, corporate social responsibility, and green marketing for an environmentally sustainable sport facility.

Practical significance

As noted throughout this chapter, limited research on green sport facility marketing strategies exist, specifically that which focuses on LEED. However, examining marketing strategies and sponsorship trends can assist in identifying the potential opportunity LEED offers in soliciting sponsorships. Application of cause-related marketing and corporate social responsibility strategies and theoretical concepts deepens the understanding of successful sport facility sponsorship solicitation and contributes to the sport management field explicitly for facility management and marketing teams.

Corporate social responsibility involves a corporate commitment to being socially responsible, which may include a general concern for the environment. If the corporation chooses to embrace

green initiatives as the social issue of concern, then sponsoring a LEED-certified facility would be a good fit for a corporate social responsibility commitment. In return, the corporation can use this particular sponsorship as a cause-related marketing tool, demonstrating the pledge to the social issue – in this case, the environment – to potential investors and consumers through the sponsorship of a LEED-certified facility. This knowledge adds to the current body of knowledge on the topic of green sport marketing, specifically green marketing which is focused on marketing a LEED-certified public sport facility. Once a facility has achieved LEED certification, the facility marketer has a unique opportunity to use LEED as a cause-related marketing tool when soliciting sponsorships. A facility marketer who recognizes this opportunity and understands both corporate social responsibility and cause-related marketing may choose to link these into the solicitation process. For example, the Minnesota Twins (MLB) staff members are known to be proud of their LEED Silver Target Field. They tout their “Go Twins, Go Green” message to potential donors, highlight the environmental initiatives for online viewers (http://minnesota.twins.mlb.com/min/ballpark/go_green.jsp), and offer anyone interested a behind-the-scenes tour of the sustainability features of the stadium and how these fit LEED standards. These marketing strategies exemplify a sport organization that has linked their LEED-certified facility with a marketing scheme.

Taking into account the theoretical and practical significance, there exists a unique opportunity for researchers to gain insight from the highlighted research. Sport facility managers require fiscal responsibility, sponsorship solicitation success, and commitments to the environment and community. The findings will serve as a sponsorship solicitation reference for LEED and other green sport facilities.

Future research recommendations

Sport facility managers require fiscal responsibility along with a commitment to both the environment and community. With limited research on the area of sport sponsorship solicitation using LEED, there are several recommendations for future projects. One such area for potential research is the development of case studies on sport facility managers who report strong sponsorship solicitation strategies using LEED and/or green marketing strategies. These case studies could be expanded to include data collection from site visits and additional interviews with facility marketers and other relevant staff members. Each case study would be valuable to adding additional information to sponsorship solicitation best practices. A second recommendation for further study is to conduct a similar study to Huberty (2013) with reflections from the sponsor’s point of view to determine what a sponsor believes to be a good fit when partnering with a sport facility. The results from Huberty’s (2013) study could then be compared and contrasted with that of this complementary research to enrich the existing findings and recommendations. A third research recommendation is to compare and contrast professional, collegiate, and community sport facilities to identify trends and best practice recommendations. Such a study might focus on facilities within the United States as well as internationally.

In conclusion, green facility development within the sport industry is more than just a trend; it is the industry standard. Investigating how to use LEED certification as a marketing tool is beneficial to facility designers, builders, managers, marketers, and operators. Being able to profit from a LEED certification and other environmental sustainability initiatives will benefit sport marketers by being able to positively affect their bottom line, thereby assisting in the accomplishment of financial organizational objectives. Information within this chapter encourages sport managers use their green initiatives when communicating with and securing sponsors. Having the knowledge and ability to engage in this process may offer both environmental and financial benefits to our sport organizations and their sponsors.

References

- Aaker, D. (1996). *Building strong brands*. New York, NY: Free Press.
- Alwitt, L., & Pitts, R. (1996). Predicting purchase intentions for an environmentally sensitive product. *Journal of Consumer Psychology*, 5, 49–64.
- Arthur, D., Scott, D., & Wood, T. (1997). A conceptual model of the corporate decision making process of sport sponsorship acquisition. *Journal of Sport Management*, 11, 223–233.
- Barone, M., Miyazaki, A., & Taylor, K. (2000). The influence of cause-related marketing on consumer choice: Does one good turn deserve another? *Journal of the Academy of Marketing Science*, 28, 248–262.
- Brownlee, E., Huberty, L., Shreffler, M., Yoo, J., & Brown, T. (2012, May). *Student opinions of green building practices within recreational sports facilities*. Paper presented at the meeting of the North American Society for Sport Management, Seattle, WA.
- Chadwick, S. (2006). Distinguishing between short-term and long-term commitment in football shirt sponsorship programmes: Towards a matrix of management implications. *International Journal of Sports Marketing and Sponsorship*, 7, 163–179.
- Chan, R. (2001). Determinants of Chinese consumers' green purchase behavior. *Psychology & Marketing*, 18, 389–413.
- Chard, C., Mallen, C., & Bradish, C. (2013). Marketing and environmental sustainability in the sport sector: Developing a research agenda for action. *Journal of Management and Sustainability*, 3, 33–44.
- Chavanat, N., Martinet, G., & Ferrand, A. (2009). Sponsor and sponsees interactions: Effects on consumers' perceptions of brand image, brand attachment, and purchasing intention. *Journal of Sport Management*, 23, 644–670.
- Chen, K., & Zhang, J. (2011). Examining consumer attributes associated with collegiate athletic naming rights sponsorship: Development of a theoretical framework. *Sport Management Review*, 14, 103–116.
- Copeland, R., Frisby, W., & McCarville, R. (1996). Understanding the sport sponsorship process from a corporate perspective. *Journal of Sport Management*, 10, 32–48.
- Crimmins, J., & Horn, M. (1996). Sponsorship: From management ego trip to marketing success. *Journal of Advertising Research*, 36(4), 11–20.
- Cunningham, S., Cornwell, T., & Coote, L. (2009). Expressing identity and shaping image: The relationship between corporate mission and corporate sponsorship. *Journal of Sport Management*, 23, 65–86.
- Dittmar, L. (2010). If you can't measure it, you can't manage it. *SAP Insider Special Report Sustainability*. Retrieved from www.deloitte.com/view/en_US/us/Services/additional-services/sustainability-climate-change/51ed81c6420f9210VgnV CM100000ba42f00aRCRD.htm
- Dolphin, R. (2003). Sponsorship: Perspectives on its strategic role. *Corporate Communications: An International Journal*, 8, 173–186.
- Farrelly, F. (2010). Not playing the game: Why sport sponsorship relationships break down. *Journal of Sport Management*, 24, 319–337.
- Feldman, S., Soyka, P., & Ameer, P. (1997). Does improving a firm's environmental management system and environmental performance result in a higher stock price? *Journal of Investing*, 6(4), 87–97.
- Ginsberg, J., & Bloom, P. (2004). Choosing the right green marketing strategy. *MIT Sloan Management Review*, 46(1), 79–84.
- Gwinner, K., & Bennett, G. (2008). The impact of brand cohesiveness and sport identification on brand fit in a sponsorship context. *Journal of Sport Management*, 22, 410–426.
- Gwinner, K., & Eaton, J. (1999). Building brand image through event sponsorship: The role of image transfer. *Journal of Advertising*, 28, 47–57.
- Hartnett, F., & Stubbs, D. (2012). *London 2012 sustainability partners*. Retrieved from <http://learninglegacy.independent.gov.uk/documents/pdfs/sustainability/cs-london-2012-sustainability-partners.pdf>
- Huberty, L. (2013). *Using Leadership in Energy and Environmental Design (LEED) certification to solicit sponsorships: A strategic framework for public sport facility marketers* (Doctoral dissertation). Retrieved from <http://purl.umn.edu/158395>
- Irwin, R., Lachowetz, T., & Cornwell, J. (2003). Cause-related sport sponsorship: An assessment of spectator beliefs, attitudes, and behavioral intentions. *Sport Marketing Quarterly*, 12, 131–139.

- Kim, K., Kwak, D., & Kim, Y. (2010). The impact of cause-related marketing (CRM) in spectator sport. *Journal of Management & Organization*, 16, 515–527.
- Kim, Y., Smith, R., & James, J. (2010). The role of gratitude in sponsorship: The case of participant sports. *International Journal of Sports Marketing and Sponsorship*, 12, 53–75.
- King, A., & Lenox, M. (2001). Does it really pay to be green? *Journal of Industrial Ecology*, 5, 105–116.
- Lachowetz, T., & Gladden, J. (2003). A framework for understanding cause-related sport marketing programs. *International Journal of Sports Marketing and Sponsorship*, 4, 313–333.
- Lee, H., & Cho, C. (2009). The matching effect of brand and sporting event personality: Sponsorship implications. *Journal of Sport Management*, 23, 41–64.
- Lee, J., & Ferreira, M. (2011). Cause-related marketing: The role of team identification in consumer choice of team licensed products. *Sport Marketing Quarterly*, 20, 157–169.
- Leuthesser, L. (1988). *Defining, measuring, and managing brand equity* (Working Paper No. 88–104). Cambridge, MA: Marketing Science Institute.
- London Organising Committee of the Olympic Games and Paralympic Games Ltd. (2012). *London 2012 post-games sustainability report*. London: London 2012.
- Mael, F., & Ashforth, B. (1992). Alumni and their alma mater: A partial test of the reformulated model of organizational identification. *Journal of Organizational Behavior*, 13, 103–123.
- Mallen, C., Adams, L., Stevens, J., & Thompson, L. (2010). Environmental sustainability in sport facility management: A Delphi study. *European Sport Management Quarterly*, 10, 367–389.
- McCarville, R., & Copeland, R. (1994). Understanding sport sponsorship through exchange theory. *Journal of Sport Management*, 8, 102–114.
- McFarlane, H. (2012). *McDonald's: Developing a zero waste strategy for the games*. Retrieved from <http://learninglegacy.independent.gov.uk/documents/pdfs/sustainability/mr-mcdonald-s-zero-waste-strategy.pdf>
- Meenaghan, T. (1991). The role of sponsorship in the marketing mix. *International Journal of Advertising*, 10, 35–47.
- Mendelson, N., & Polonsky, J. (1995). Using strategic alliances to develop credible green marketing. *Journal of Consumer Marketing*, 12(2), 4–18.
- Polonsky, M., & Rosenberger III, P. (2001). Reevaluating green marketing: A strategic approach. *Business Horizons*, 44(5), 21–30.
- Polonsky, M., & Wood, G. (2001). Can the overcommercialization of cause-related marketing harm society? *Journal of Macromarketing*, 21(8), 8–22.
- Raiborn, C., Payne, D., & Joyner, B. (2013). Environmentally friendly business strategies: BP – a case of rhetoric or reality? *Journal of Business and Management*, 19(2), 67–89.
- Ross, S. (2006). A conceptual framework for understanding spectator-based brand equity. *Journal of Sport Management*, 20, 22–38.
- Roy, D., & Graeff, T. (2003). Consumer attitudes toward cause-related marketing activities in professional sports. *Sport Marketing Quarterly*, 12, 163–172.
- Sarni, W. (2009). Corporate outlook: Will sustainability programs need a bailout? *Sustainability: The Journal of Record*, 2(1), 24–27.
- Simpson, W. (2003). Energy sustainability and the green campus. *Planning for Higher Education*, 31, 150–158.
- Smith, W., & Higgins, M. (2000). Cause-related marketing: Ethics and the ecstatic. *Business & Society*, 39, 304–322.
- Tajfel, H., & Turner, J. (1979). An integrative theory of intergroup conflict. In W. G. Austin & S. Worchel (Eds.), *The social psychology of intergroup relations* (pp. 33–47). Monterey, CA: Brooks-Cole.
- Thwaites, D. (1994). Corporate sponsorship by the financial services industry. *Journal of Marketing Management*, 10, 743–763.
- Trail, G., Anderson, D., & Lee, D. (2006, November). *Determinants of attendance: The predictive value of team identification, past attendance, and attendance intentions*. Paper presented at the meeting of the Sport Marketing Association, Denver, CO.
- Uecker-Mercado, H., & Walker, M. (2012). The value of environmental social responsibility to facility managers: Revealing the perceptions and motives for adopting ESR. *Journal of Business Ethics*, 110, 269–284.
- Wann, D. (1995). Preliminary validation of the Sport Fan Motivation Scale. *Journal of Sport and Social Issues*, 20, 377–396.

12

SPONSORS AS MESO-LEVEL ACTORS IN SPORT

Understanding individual decisions as foundational to sustainability in food and drink

T. Bettina Cornwell and Joerg Koenigstorfer

Imagine the following situation: a family decides to go to a venue and watch their favorite baseball team. All the family members look forward to attending the game and having a great time together. After they have entered the stadium and before the game, they want to get something to eat. What options are available to them? What foods do the children want? What do their peer group members (i.e., friends and other fans) eat? What is the typical or traditional food that one eats in the stadium before (during or even after) watching the game? How do the favorite team's sponsors influence food and drink decisions? These questions are relevant to individuals, families, and the whole of society, because events held in arenas, stadiums, and other entertainment venues are commonplace. Importantly, these contexts present a restricted and bounded food and drink context that is often in conflict with individual and societal goals related to sustainability and health.

Food and drink offerings and individual choices – constrained inside sport stadiums and arenas to consumption of beef (as in hot dogs) and sweet drinks (as in high-sugar colas) (Williams & Williams, 2013) – and the high prevalence of overweight and obesity are a concern to our society (Hill & Peters, 1998). Corporate sponsors can exert influence on these patterns and infrastructures. Because sponsors link their brands (and their products and services) to sport teams they are, in turn, often liked and supported by sport spectators (Cornwell, 1995). Also, food and drink companies that sponsor sport entities often have the exclusive right to sell food and beverages at sport events. Thus, it is the interaction between individual decisions and the food and drink offerings available in venues (often under sponsors' control) that determine the sustainability and healthiness of food and drink choices.

This chapter examines the relationship between sponsorship-linked marketing efforts of sport sponsors (in the example, the sponsors of a baseball team) with sustainable food and drink consumption patterns of sport spectators (in the example, the family's food and drink choices). The goal is to develop an encompassing model of how both sponsors and sponsored entities and their venues can influence spectators' food and drink choices. Such conceptual work is needed because event goers and in particular, spectators of sport events, struggle to make food and drink decisions that meet common sustainable criteria. Referring to the introductory example, the family may be generally

interested in sustainable food and drinks and healthy nutrition; however, when they attend a game, they may have no option to follow their preferences or they may be unlikely to make healthy and sustainable decisions for contextual reasons. For example, spectators may highlight enjoyment goals and thus eat tasty and rather unhealthy foods; they may have the ritual to eat a hot dog in the baseball stadium and may thus want to stick to their habit; or they may feel hungry because of the length of the game and then feel a sudden urge to have the same food as the fan sitting in front of them (because of the smell of the tasty food). In these cases, the food does not necessarily conform to sustainability criteria. A further aim of this chapter is to develop a conceptual framework that incorporates micro decision-making of individuals, meso-level actors such as sponsors, sport organizations, and venues as well as macro cultural and societal-level influences and outcomes.

In what follows, we first introduce the concept of sustainability focusing on the food and drink sector. Next, we develop a conceptual framework of the role of micro, meso, and macro levels for food and drink decision-making in venues. Specifically, we refer to the sport event (marketplace) characteristics that influence individual (or group) decision-making processes with regard to food and drink choices. We conclude by providing managerial implications as well as public health implications and directions for future research.

Sustainability and micro–macro linking

The concept of sustainability is a central issue to the survival of humankind. The United Nations (UN, 1987) has defined sustainable development as:

development that meets the needs of the present without compromising the ability of future generations to meet their own needs. It contains within it two key concepts: the concept of “needs,” in particular the essential needs of the world’s poor, to which overriding priority should be given; and the idea of limitations imposed by the state of technology and social organization on the environment’s ability to meet present and future needs.

(p. 41)

The UN (1992) also published a consensus statement that emphasized sustainability as a multi-faceted concept, because it has economic, social, and ecological relevance. Importantly, sustainability discussions must link individual decision-making to environmental goals.

The 2015 Sustainable Development Goals (SDGs) go even further than in past documents and declare “Sustainable Consumption” as one of the 17 goals for 2030 (UN, 2015). Important in this discussion is the linking of the micro behavior of individuals to macro outcomes for society (Cornwell & Drennan, 2004). Unfortunately, what we know conceptually from our evolutionary tendencies (Griskevicious, Cantú, & van Vugt, 2012) and empirically from policy analysis (Arquitt & Cornwell, 2007) is that it is challenging to move individuals to change for the good of society at large. We must study individuals so to understand their behaviors and goals. It is, however, at the meso level, where actors can have the largest influence on individuals’ decisions (Layton, 2008). In his observations regarding strategies for sustainability, Clay (2010) argued that it is easier to address change with the few thousand intermediaries than with millions of consumers. The thinking is to understand individual micro behavior but to influence this behavior via meso-level changes to offerings, systems, and policies. The effects of any change at the meso level (and then potentially at the micro level) towards more sustainable decision-making processes can then be seen at the macro level, that is, an increase in the sustainability of the society’s actions in general.

Sustainability in the food and drink sector

Today's food and drink sector plays a major role in how sustainable our world is and how it is perceived to be. Today's food and drink production and consumption are viewed critically with respect to common sustainability criteria. The Levett-Therivel sustainability consultants (2005) who published a report based upon the findings of the Sustainable Development Commission in the United Kingdom defined sustainable food and drink as that which:

is safe, healthy, and nutritious, for consumers in shops, restaurants, schools, hospitals, etc.; can meet the needs of the less well off people; provides a viable livelihood for farmers, processors, and retailers, whose employees enjoy a safe and hygienic working environment, whether in the UK or overseas; respects biophysical and environmental limits in its production and processing, while reducing energy consumption and improving the wider environment, and also respects the highest standards of animal health and welfare, compatible with the production of affordable food for all sectors of society; supports rural economies and the diversity of rural culture, in particular through an emphasis on local products that keep food miles to a minimum.

(p. v)

Some of the challenges to produce and consume foods and drinks in a sustainable way include the following (Reisch, Eberle, & Lorek, 2013):

- (1) industrialization and globalization of agriculture and food and drink processing;
- (2) food and drink production's contribution to climate change (in particular, high greenhouse gas emissions);
- (3) land-use conflicts triggered by food and drink production;
- (4) food and drink production's contribution to water pollution and scarcity, soil degradation, and eutrophication of water bodies;
- (5) food and drink production's contribution to loss of habitats and biodiversity;
- (6) people's increasing consumption of dietary animal protein;
- (7) people's increasing consumption processed food;
- (8) the gap between rich and poor people and thus the amount of money they can afford for sustainable foods and drinks;
- (9) the paradoxical lack of food and drink security at times of an abundance of food;
- (10) access to sustainable foods and drinks by everyone; and
- (11) the interrelationship between food and drink consumption and individual and societal health.

These challenges are reflected in policies and regulations, business practices, and consumption patterns (i.e., consumer decision-making processes), and stakeholders often have diametrical interests (e.g., meat industry vs. vegan consumers). In order to produce and consume foods and drinks more sustainably, the following strategies (among others) that are mostly directed at influencing consumers' decision-making processes in industrialized countries have been proposed (Reisch et al., 2013; Sedlacko, Pisano, Berger, & Lepuschitz, 2013):

- Reduce consumption of meat (especially beef) and dairy products
- Reduce consumption of sodas and increase consumption of water
- Prefer organic fruits and vegetables
- Buy local and avoid goods that have been transported by air
- Adjust food and drink consumption volumes to reduce overweight and obesity.

Because there is a growing population and increased wealth, consumers are impelled to consider these recommendations in order to eat and drink in a sustainable manner (Tukker et al., 2011). The recommendations are regularly discussed and implemented in different contexts (such as schools, households, and restaurants). Sport and entertainment venues are another context that is relevant to sustainable food and drink decision-making. In what follows, we discuss the importance of sport sponsorship by food and drink companies and their influence on the availability (and affordability) of sustainable options at sport stadiums and arenas.

Food and drink industry sponsors in sports

The sport context presents a number of unique challenges to sustainability. Because one typically buys a ticket to see a sporting event, individuals as spectators (and at times participants) enter a guarded or gated area. Within their boundaries, sport venues typically have strictly enforced limitations on food and drink that may enter, in part as a security measure, and frequently to control alcohol consumption in particular. Security companies or event volunteers search bags and often require event attendees to dispose of all food and drink. Further, event organizers, for example a visiting exhibition game organizer, have some say in what will and will not be allowed at a particular event. These decisions may in turn relate to event sponsors.

Sponsors frequently hold “pouring rights” or vendor agreements at venues such that only their products will be on offer to consumers. Contractual rights of companies in public venues such as schools have long been a heated point of discussion (Almeling, 2003; Nestle, 2000) but concern about the nature and range of food and drink options has not been the focus for venues. Many sport venues contain permanent branded outlets within their confines and may have “pop-up” restaurants and vendors that serve during events. The combination of security measures and sponsor contracts creates a captive audience of consumers.

In broad consideration of food eaten outside the home, sponsors have come under scrutiny in the United States due to new Food and Drug Administration (FDA) menu labeling laws (Williams & Williams, 2013). In addressing the health qualities of food eaten outside the home, these menu labeling laws will disclose to consumers the calorie content of foods with the expectation that a better understanding of the food and drink will result in healthier decision-making and perhaps on the part of the food and drink vendor, healthier options from which to choose. Thus, companies may want to seek healthier offerings in advance of further legal mandates. In the European Union, only allergen information is mandatory on non-prepacked food (including in restaurants and cafes) (European Parliament, 2011). Sustainability is not part of these initiatives regarding nutrition labeling but may benefit from them.

Interestingly, food and drink companies that act as sponsors at sport venues typically have commitments to sustainability as part of their corporate mission. If the companies strive for consistency between mission statements and business practices, the company’s sponsorship linked marketing activities – that is, “the orchestration and implementation of marketing activities for the purpose of building and communicating an association to a sponsorship” (Cornwell, 1995, p. 15) – should be directed at increasing sustainability. This is what many food and drink sponsors claim as their goal. For example, the Olympic Games sponsor McDonald’s (2016) states on their homepage:

From the start, we’ve been committed to doing the right thing. Today, our sustainability efforts align with our business practices and policies to continue our rich heritage of making a positive impact on society. In 2013, McDonald’s developed a Global Sustainability Framework with five focus areas or pillars – food, sourcing, planet, people and community. We set measurable, specific goals for some of these pillars to advance what we call “Our Journey Together For Good.”

As part of their sponsorship, McDonald's promotes their offerings and aligns its sponsorship-linked marketing activities with the "I'm lovin' it" campaign.

Despite efforts on the part of McDonald's, the sponsorship has been criticized because the company's core food products have low nutritional value and may contribute to overweightness and obesity not only in adults but also in children (e.g., Children's Food Campaign, 2012). Furthermore, their sustainability efforts may be subject to critique with regard to several other aspects (e.g., fast food packaging, beef options, and work conditions). Lastly, their sports-related promotions such as allowing athletes at the 2016 Olympic Games to have free food (Rogers, 2016) hold questionable promotional aims. Was their intent to show healthy athletes eating their products? Although McDonald's' sponsorship of the Olympic Games is only one example for a sport sponsorship of a food company, it showcases the influence that food and drink sponsors can exert on decision-making processes with regard to sustainable consumption at sport events. The sponsors can be considered meso-level actors that influence consumer decisions based upon the availability of and access to sustainable food and drink options.

Following our arguments with regard to the interplay between meso-level factors and individual (or group) decision-making, there is a need for a conceptual model of consumer decision-making within the emotionally charged and culturally steeped context of sport. In what follows, we refer to the goal conflict theory of eating to develop a conceptual framework that explains how sport spectators' food and drink choices are influenced based upon individual characteristics, sport event (marketplace) characteristics, and the sponsors of food and drinks (and sponsored entities) as meso-level actors. The framework takes into account the trade-offs between short-term and long-term goals that consumers make and looks at the contextual factors that may influence this trade-off, either consciously or unconsciously.

Model development

Our conceptual framework refers to three levels of analysis: the micro level (i.e., the individuals in context and with peers [at the sport event]); the meso level (i.e., the companies, sport organizations, and facilities that determine the availability of and access to food and drinks [at the sport event]); and the macro level (i.e., the society-level outcome with regard to the sustainability of food and drink production, offering, and consumption [at the sport event]). At each level, certain goals can be defined (see Figure 12.1).

At the micro level, the consumption of food and drinks is the result of conscious or unconscious (we could also say automatic) approach (or avoidance) of foods and drinks with different taste and health perceptions, and these approach or avoidance behaviors are influenced by individual characteristics as well as sport event (marketplace) characteristics. The nature of, and the interplay between, these factors, as well as the relationship to sponsors (i.e., meso-level actors) and to our society at large, will be explained in the following sections.

Understanding sport spectators and their individual decision-making processes

Beyond sheer hunger, dietary choice is thought to have nine factors: sensory appeal, health, weight control, mood, convenience, natural content, price, familiarity, and ethical concern (Step-toe, Pollard, & Wardle, 1995). Because one can rarely take into account all the factors at the same time, goal conflicts arise, and these goal conflicts influence decision-making processes. More specifically, when individuals make decisions about what and how much they eat and drink, there is often a conflict between two incompatible goals: enjoyment (highlighting the sensory

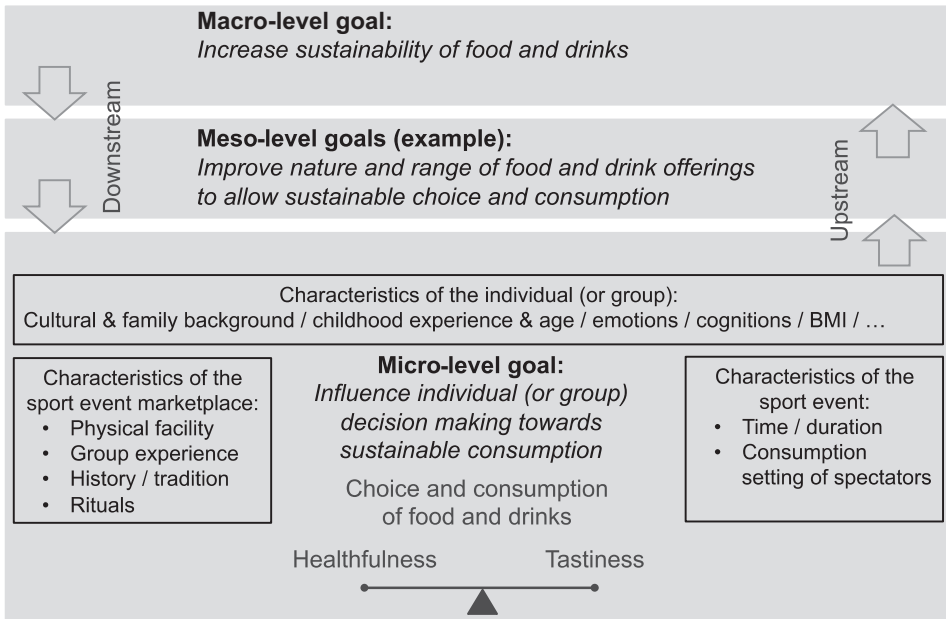


Figure 12.1 Conceptual framework of individuals' (or groups') food and drink decision-making at sport events (as spectators) and its sustainability depending on micro, meso, and macro levels

appeal of food and drinks) and control/health (highlighting the healthfulness and potentially the sustainability of food and drinks). According to the goal conflict model of eating (Stroebe, Van Koningsbruggen, Papies, & Henk, 2013), even chronic dieters who are motivated to pursue their weight control goal fail to stick to their goal in environments that are rich in tasty foods and drinks. This is because they are surrounded by tasty food and drink cues that prime the goal of enjoyment (as opposed to weight control). The activation of the enjoyment goal consequently inhibits the cognitive representation of the weight control goal and increases the processing of palatable food and drink stimuli, preferentially in chronic dieters. Thus, the consumption of unhealthy (and possibly unsustainable food) is more likely for most of these consumers. These goal conflicts are likely to be highly relevant for spectators at sport events, as the environment can be considered to be rich of tasty foods and drinks. In what follows, we describe some of the characteristics that influence food and drink decision-making processes of sport spectators, highlighting those variables that may affect what and how much sport spectators consume in sport stadiums and arenas. We first refer to individual (or group) characteristics and then to sport event (marketplace) characteristics.

Individual (or group) characteristics

Food and drink healthfulness and tastiness perceptions are highly subjective and are often seen as weighed against one another with healthy food seen as less tasty (Ragunathan, Naylor, & Hoyer, 2006). However, this is moderated by some important characteristics, such as cultural background (Werle, Trendel, & Ardito, 2013). Despite the fact that genetic predispositions such as the preference for sweet and salty tastes, familiar foods, and foods with a positive influence on

post-ingestion are expressed in learned preferences, the environment determines the adequacy of diets (Birch, 1992). In the United States, for example, the food environment is often described as obesogenic, because of easy accessibility to large portions of inexpensive, energy-dense foods, high in sugar, fat, and salt (Hill & Peters, 1998). Thus, the food and drink environment in a culture influences individuals' food and drink preferences. Also, the family background is relevant: in families, so-called nutritional gatekeepers often control what food and drink options are available; they influence the eating environment of their family members (e.g., by giving out portions, choosing plates with certain sizes). The nutritional gatekeeper is responsible for about 72 percent of all food consumption decisions of other family members (Wansink, 2006). Within family contexts, childhood experiences matter: children learn to like sweet and dislike bitter tastes; their food choices are heavily influenced by familiarity; and children (vs. adults) choose more often the foods that they like best (Anliker et al., 1991; Birch, 1992). However, as individuals get older, olfactory and taste deficits are more prevalent (Weiffenbach & Bartoshuk, 1992) and the pleasure of eating reduces.

From a physiological perspective, the sensory pleasure in response to food and drinks is likely mediated by brain neurotransmitters or brain peptides (Drewonwski, 1997). Emotions often go along with such physiological reactions and they influence (as well as result from) the consumption of food and drink. According to Macht (2008), there are five classes of emotion-induced changes of eating: emotional control of food choice, emotional suppression of food intake, impairment of cognitive eating controls, eating to regulate emotions, and emotion-congruent modulation of eating. Emotion-induced changes to eating can be a result of interference by emotions, a byproduct of emotions, or a consequence of regulatory processes (i.e., emotions may regulate eating, and eating may regulate emotions). Food and drink choices are also influenced by cognitive processes, such as the degree of individuals' dietary restrained eating behavior, price considerations, and health/sustainability perceptions (Step toe et al., 1995). Because emotional (but not cognitive) processes can be fully automatic, a large proportion of the cognitive processes is devoted to overruling automatic approach tendencies towards foods and drinks that are palatable and energy dense (e.g., high-sugar options). If individuals are not successful at monitoring their food and drink decision-making, they are more likely to become overweight or obese. These conditions are thought to result from an interaction between genetic predisposition and exposure to environmental variables such as food and drinks. There is ample evidence that overweight and obese persons are more likely to externalize their internal monitoring of food and drink intake, and the externalization may even be harmful to their body weight status because of the food and drink companies' marketing efforts to promote certain foods and drinks as particularly supportive of body weight control and the negative effects on consumption volumes (Chandon & Wansink, 2012).

Although both individual and group (particularly family) characteristics influence what and how much people eat at a venue, the environment in which food and drink consumption takes place is determined by the sport event marketplace and some features of the sport event itself. Sponsors and sponsored entities have notable impacts on this particular setting (e.g., based upon contractual rights); thus, we next describe the sport event (marketplace) characteristics.

Characteristics of the sport event marketplace

The sport event marketplace and the product and service providers in them are influenced by four characteristics: physical facility, group experience, history/tradition, and rituals (Underwood, Bond, & Baer, 2001). These characteristics affect what people eat and how much they eat,

as well as how the goal conflict model works, that is, which of the two goals – enjoyment vs. control/health (and potentially sustainability) – predominates.

Physical facility

The physical facility provides the environment in which foods and drinks are bought (“food and drink environment”) and consumed (“eating and drinking environment”) (Wansink, 2006). In the sport event marketplace context, food and drinks are bought from “pop-up” restaurants and vendors inside sport stadiums and arenas. The sum of the contextual stimuli of the environment is called “ambience” (Stroebele & De Castro, 2004). Ambience influences individual decision-making processes in terms of both food and drink choices and food and drink consumption.

The food and drink environment includes the factors that directly relate to the way food and drinks are provided or presented, such as their salience, structure, package, or portion size, and how it is served. There is evidence that sponsors and sponsored entities can do a better job in providing a more sustainable food and drink environment. A study of sport, recreational, and cultural facilities in Quebec City, Canada, found foods offered to be of low nutritional value (Chaumette, Morency, Royer, Lemieux, & Tremblay, 2008). Williams and Williams (2013) report that the accessibility to water fountains is limited inside stadiums – referring to the Dodgers Stadium, where three water fountains were installed when the stadium was built (one in each dugout and one in the owner’s office).

In our own research, we recorded visitors of an international track and field event held in the U.S. Pacific Northwest making the following statements: “[We want] better food, breakfast chow for spectators”; “Maybe the food should be better because we are athletes and there was a lot of fast food”; “More food choices would be appreciated”; “Foods [are] not good, [we] need healthy food, water”; “[We want] more food vendors/vegetarian options”; and “[We] need more local food vendors.” These claims go hand in hand with the aforementioned strategies to increase the sustainability of food and drinks, and they call for meso-level actions to increase the salience of sustainable foods and drinks. Simply seeing water fountains or seeing (or smelling) healthy and sustainable foods may trigger an increase of consumption of such products over less healthy and less sustainable options.

Beside the salience, accessibility, and affordability of sustainable foods and drinks, other variables influence what and how much people eat. For example, the size of portion servings in kitchens and in restaurants influences consumption (Edelman, Engell, Bronstein, & Hirsch, 1986; Nisbett, 1968; Rolls, Morris, & Roe, 2002). Also, the size of packages, plates, bowls, and spoons can increase consumption because it gives people an indication of how much should be served and consumed (Van Ittersum & Wansink, 2012; Wansink, 1996). Smaller size goes along with less consumption. Other features such as the labeling on the packaging are also relevant (Williams & Williams, 2013). Lastly, the payment method influences consumption patterns (Feinberg, 1986). If sport event attendees use an event organizer-issued card to pay for foods and drinks, they may consume more than they planned and may be less conscious about their food and drink spending.

The eating and drinking environment represents the ambient factors that are associated with eating and drinking patterns, but that are independent of food, such as atmospheric, the effort of obtaining food, the social interactions that occur, and the distractions that may be taking place (Wansink, 2006); the latter two aspects will be discussed subsequently. Atmospheric includes temperature, lighting, odor, and noise; spectators may consume more food during prolonged

cold temperatures than during hot temperatures to keep their body warm, but may drink more during hot temperatures to cool their body down (Brobeck, 1948). Lighting, odor, and noise can make the environment more (or less) comfortable or enjoyable and thus may increase (or decrease) food and drink consumption (Wansink, 2006). The effort to access food and drinks represents the convenience. The more effort it takes sport spectators to access food and drinks (e.g., having to wait in line for a long time, having to walk a long way to the vendor), the lower consumption (Wing & Jeffrey, 2001). For example, people eat more ice cream when the lid of an ice cream cooler is left open than when it is closed (Meyers, Stunkard, & Coll, 1980). Sport event organizers often try to reduce spectators' effort to access particular foods as much as possible, such as having persons walking through the stands selling ice cream and sodas. Thus, food and drink options and uptake may be moderated by the effort to obtain these foods.

Group experience

Making food and drink choices with influential others present can sway decision-making. In a broad sense, people are influenced by the food and drink choices of peer groups such as spouses, friends, siblings, and even strangers (De Castro, 1994; Pachucki, Jacques, & Christakis, 2011). Eating with familiar people can extend mealtimes (Bell & Pliner, 2003). Eating in the presence of others influences food choice and intake in a number of ways. Social norms can account for intake linked to the presence of others through two mechanisms: how much they eat and how eager one is to impress them (Herman, Roth, & Polivy, 2003). For example, researchers have found that in restaurant dining, individuals anchor on the quantities others around them select, but also adjust their portion according to the body type of those influential others (McFerran, Dahl, Fitzsimons, & Morales, 2010).

In addition to discussing individual and group behavior, it is worthwhile to talk about particular individuals that may be more vulnerable in, or at least exposed to, sport event marketplaces. As one could expect, adolescent eating behavior is influenced by the social environment of family and peers (Story, Neumark-Sztainer, & French, 2002). Also, obese individuals are particularly prone to increasing their food and drink consumption depending on others (Herman, Olmsted, & Polivy, 1983).

History/tradition

Sports have many food-related histories and traditions – some sustainable and healthy, others not. The history of eating well to *play* sport is often in sharp contrast with traditions of viewing sport. For example, enjoying tailgating foods and beverages has been reported as one reason that individuals give for participation in tailgating tradition (James, Breezeel, & Ross, 2001).

Rituals

Rituals are set patterns of behavior that typically have a sequential nature. Rituals may be based on traditions in a sport community but differ from traditions by having some symbolic aspect. A food-related ritual for sports spectators can be to have a hot dog at a ballgame, to name but one example. Consumption scripts may be activated by different sports game-related actions, such as tailgating before the game, having popcorn and soda during the game, and having a burger during halftime. In the latter case, distractions (that will be discussed later) initiate the consumption script (e.g., getting up from the seat, going to the bathroom, and then getting

foods and drinks). Due to their implicit nature (i.e., they become a habit) and their symbolic meaning, food-related rituals are hard to change. Individuals may then consume foods and drinks even though they are not hungry or thirsty. They also reduce the monitoring of food and drink consumption (Wansink, 2006).

Characteristics of the sport event

The marketplace characteristics mentioned earlier are not the only factors that may affect sport spectators' food and drink choices. The sport event itself may have some idiosyncratic features that may influence what and how much people eat. Some important characteristics are the time when the sport event takes place as well as the duration of the event and the consumption setting (e.g., interruptions, breaks, sitting/standing spectators, and their physical activity levels).

Time/duration

Many games naturally extend over a typical mealtime or are even planned to do so. The longer a sport event lasts, the more important is sport spectators' access to food and drinks. Also, games during typical eating times (breakfast, lunch, dinner) are likely to have more sport spectators eat and drink during their visit.

Consumption setting

There has been limited work on understanding sport settings as a food consumption context. One review that considered 14 published studies (Carter et al., 2011) primarily from Australia concluded that research to date was inadequate and methodologically limited, so much so, that conclusions about the impact of these contexts on, in particular, child food behavior, was difficult to determine. In what follows, we refer to previous evidence on food and drink decision-making in non-sport-related contexts and try to argue how and when the consumption setting at sport events may influence individual (or group) decision-making with respect to sustainable options.

As noted before, interruptions during the sport event can activate consumption scripts, which can be unrelated to hunger. Other interruptions may give the food and drink sponsors some time to present their products and services (e.g., sponsored content on the television screens when there are no game actions). Official game breaks give sport spectators the possibility to get food and drinks (e.g., time-out, halftime) but commercial television breaks may offer time that needs to be filled so to avoid boredom. Another factor that influences consumption of food and drinks relates to spectators' posture and level of physical activity. If people sit and are inactive, eating and drinking becomes more convenient. If people stand or even walk (such as during a golf event), eating and drinking becomes more inconvenient. Again, the presence of others likely interacts with some relevant consumption settings: the closer people sit together and the easier it is to simply observe the behavior of others while eating and drinking, the more likely it the (automatic) impact on one's own behavior (Herman et al., 1983).

The influence of sponsors on sustainable food and drink choices of sport spectators

What can sponsors (and sponsored entities) do to influence individual decision-making processes towards more sustainable food and drink consumption patterns? Table 12.1 summarizes

Table 12.1 Challenges to sustainability food and drink in the sport context and calls for action for sponsors (and sponsored entities) as meso-level actors

<i>Challenges to Sustainable Food and Drink in the Sport Context</i>	<i>Moderate Behavioral or System Change toward Sustainability</i>	<i>Radical Behavioral or System Change toward Sustainability</i>
<i>Individual Decision-Making Processes</i>		
Enjoyment (vs. control) goal conflict increases as sport spectators have an enjoyment mind-set during sport event attendance	Sponsors make sustainable food and drink options appear enjoyable to sport spectators (so that the goal conflict is reduced) (e.g., athlete endorsement of sustainable options)	Sponsors make sustainable food and drink options enjoyable and unsustainable options less enjoyable (e.g., provide more sustainable options place unsustainable options further away)
<i>Individual (or Group) Characteristics</i>		
Sport spectator “cultures” present obesigenic environments to spectators	Sponsors market healthy sport spectator cultures (e.g., add healthy food and drink options to the portfolio, promotions)	Sponsors or venues develop policies stating that no energy-dense food and drinks, high in sugar, fat, and salt are offered
The nutritional gatekeeper influences others negatively by endorsing unsustainable food and drinks	Sponsors give coupons on each ticket that promote sustainable food and drink options	Sponsors and sport event organizers offer stands for families only (with sustainable options and education)
Emotions override cognitions and reduce the monitoring of food and drink intake, in particular for emotional experiences such as in sport	Sponsors remind sport spectators of their eating and drinking control (e.g., providing nutrition information at the venue)	Sponsors implement educational programs about sustainable eating and drinking on site; provide free healthy food samples ¹
Childhood experiences influence adult sport spectators expect to eat unsustainable foods at sport events	Sponsors present role models to sport spectators that promote sustainable food and drink consumption in early childhood ²	Sponsors present the negative consequences of eating unsustainable foods at a young age to sport spectators (e.g., overweight and obesity)
<i>Sport Event Marketplace Characteristics</i>		
The salience, accessibility, and affordability as well as the structure, packaging, and portion sizes favor unsustainable consumption	Sponsors change the marketing-mix instruments moderately toward sustainability: pricing, products, communications, and the environment (place) ³	Sponsors change the marketing-mix instruments radically, particularly product offerings ³
Pouring rights exclusivity is a market advantage for sponsors and excludes, for example, encouraging the consumption of tap water	Allow/support refillable water bottles (e.g., with promotional message on refillable bottle by sponsors)	Require shared vendor agreements that include sustainable options (e.g., local producers), free water stations
Group experiences favor unsustainable consumption patterns	Offer group coupons that encourage sustainable food and drink consumption	Provide special seating areas for eating in an environment that primes sustainable choices

(Continued)

Table 12.1 (Continued)

<i>Challenges to Sustainable Food and Drink in the Sport Context</i>	<i>Moderate Behavioral or System Change toward Sustainability</i>	<i>Radical Behavioral or System Change toward Sustainability</i>
History and traditions as well as rituals relative to food and drink favor unsustainable consumption patterns	Improve traditional offerings (e.g., whole wheat buns on hot dogs, local meat in hot dogs)	Institute new behavior patterns that focus on healthy foods (e.g., vegetarian options or organic fruits and vegetables instead of hot dogs)
<i>Sport Event Characteristics</i> The time and duration of the event more or less require sport spectators to eat and drink	Promote athletes' sustainable behaviors and the modeling of these behaviors during game interruptions (such as drinking water or eating a banana)	Offer free water brought to the stands during hot weather conditions. Ensure that meal content and proportions support sustainability goals
Consumption settings are perceptually connected to unsustainable and unhealthy food and drink consumption	Disconnect sport events and their characteristics with food consumption patterns (e.g., encourage spectators move instead of eat during half time)	Reduce sport-oriented promotion of unhealthy and unsustainable food and drink within and outside the venue

Note. ¹Chandon and Wansink (2012) review the instruments that can be used by food and drink companies to reduce consumption volumes, particularly of unhealthy foods. ²Children have been shown to be vulnerable to an “endorser effect” when a popular sports figure is associated with a food product (Boyland et al., 2013). One could imagine that if the endorser effect can be found in advertising, that in a sports arena with this celebrity present, the effect may be even more powerful. ³This can be recommended based upon the findings from Cornil and Chandon (2013), who showed that fans consume more unhealthy food (here: saturated-fat consumption and total food-calorie intake) after a defeat of their favorite football team.

some of the main challenges to sustainable food and drink in the sport event context. Although not all observations are backed by empirical evidence that refers to the sport context, there is at least suggestive evidence that these patterns are supporting (or hindering) sustainable food and drink. We also refer to some initiatives possible by food and drink sponsors (and event organizers) to help sport spectators more sustainable and healthier decisions. The change in the behavior or the system may be incremental or radical – the latter is included to point out directions for win-win considerations for the future.

Meso and macro goals

The model moves from the individual and group at the micro level to the meso and macro level goals depicted at the top of Figure 12.1. As context and culture change and adopt sustainable food and drink and it becomes the norm, then it will influence individual food and drink choice and intake. Preference for other offerings expressed from the bottom, from the micro to the meso level, works slowly and is less powerful than a meso-level change to more sustainable healthy food and drink offerings. Increased understanding of preferences discovered via research could inform meso decisions and macro outcomes.

Important to the micro goal of healthful eating is consumer choice, and for the reasons mentioned, this choice is controlled by the sport venue in conjunction with event organizers,

sport organizations, and corporate or local sponsors. A central argument of this analysis is that consumers face constrained decision-making in sport venues and that these constraints weigh against sustainable and healthy eating and drinking. Although a sport venue may not be a “food desert” in the geographical sense of having an unaffordable distance from fruits and vegetables for consumption (Shaw, 2006), it could easily be termed in many instances an “unsupportive food environment.” This is partly due to the challenges presented in Table 12.1. All of the challenges mentioned in Table 12.1 could be supported by future research on the sport event (marketplace) and sport spectator behavior.

Conclusion

Research suggests that the stated preference for environmentally sustainable foods is often different from the behavioral patterns exhibited (Vermeir & Verbeke, 2006). This is particularly true when individuals eat out and particularly when they attend sport events at controlled venues. This chapter presented challenges to sustainable food and drink choices and examined these challenges at the micro, meso, and macro levels. It highlighted the sponsors’ role as meso-level actors. For the most part, discussions here referred to the opportunity to choose healthy options and the control of this option residing with the sport venues, event organizers, and their sponsors. A more nuanced conversation could go a step further and ask where there is choice of healthy options – say yogurts as well as ice creams – is there in turn a choice among yogurts, with an environmental friendly option available and subsequently selected? Future research should examine those social and contextual levers that might encourage the most healthy and sustainable choices.

References

- Ameling, D. S. (2003). The problems of pouring-rights contracts. *Duke Law Journal*, *53*, 1111–1135.
- Anliker, J. A., Bartoshuk, L., Ferris, A. M., & Hooks, L. D. (1991). Children’s food preferences and genetic sensitivity to the bitter taste of 6-n-propylthiouracil (Prop). *American Journal of Clinical Nutrition*, *54*, 316–320.
- Arquitt, S. P., & Cornwell, T. B. (2007). Micro-macro linking using system dynamics modeling: An examination of eco-labeling effects for farmed shrimp. *Journal of Macromarketing*, *27*, 243–255.
- Bell, R., & Pliner, P. L. (2003). Time to eat: The relationship between the number of people eating and meal duration in three lunch settings. *Appetite*, *41*, 215–218.
- Birch, L. L. (1992). Children’s preference for high-fat foods. *Nutrition Reviews*, *50*, 249–255.
- Boyland, E. J., Harrold, J. A., Dovey, T. M., Allison, M., Dobson, S., Jacobs, M. C., & Halford, J. C. (2013). Food choice and overconsumption: Effect of a premium sports celebrity endorser. *Journal of Pediatrics*, *163*, 339–343.
- Brobeck, J. R. (1948). Food intake as a mechanism of temperature regulation. *Yale Journal of Biology and Medicine*, *20*, 545–552.
- Carter, M. A., Edwards, R., Signal, L., & Hoek, J. (2011). Availability and marketing of food and beverages to children through sports settings: A systematic review. *Public Health Nutrition*, *15*, 1373–1379.
- Chandon, P., & Wansink, B. (2012). Does food marketing need to make us fat? A review and solutions. *Nutrition Reviews*, *70*, 571–593.
- Chaumette, P., Morency, S., Royer, A., Lemieux, S., & Tremblay, A. (2008). Food environment in the sports, recreational and cultural facilities of Quebec City: A look at the situation. *Canadian Journal of Public Health*, *100*, 310–314.
- Clay, J. (2010). How big brands can help save biodiversity. *TED*. Retrieved from www.ted.com/talks/jason_clay_how_big_brands_can_save_biodiversity?language
- Cornil, Y., & Chandon, P. (2013). From fan to fat? Vicarious losing increases unhealthy eating, but self-affirmation is an effective remedy. *Psychological Science*, *24*, 1936–1946.

- Cornwell, T. B. (1995). Sponsorship-linked marketing development. *Sport Marketing Quarterly*, 4(4), 13–24.
- Cornwell, T. B., & Drennan, J. C. (2004). Cross-cultural consumer/consumption research: Dealing with issues emerging from globalization and fragmentation. *Journal of Macromarketing*, 24, 108–121.
- De Castro, J. M. (1994). Family and friends produce greater social facilitation of food intake than other companions. *Physiology & Behaviour*, 56, 445–455.
- Drewnowski, A. (1997). Taste preferences and food intake. *Annual Review of Nutrition*, 17, 237–253.
- Edelman, B., Engell, D., Bronstein, P., & Hirsch, E. (1986). Environmental effects on the intake of overweight and normal weight men. *Appetite*, 7, 71–83.
- European Parliament. (2011). Regulation (EU) No 1169/2011 of the European Parliament and of the Council of 25 October 2011 on the provision of food information to consumers. *Official Journal of the European Communities L304/18*.
- Feinberg, R. A. (1986). Credit cards as spending facilitating stimuli: A conditioning interpretation. *Journal of Consumer Research*, 13, 348–356.
- Griskevicius, V., Cantú, S. M., & Vugt, M. V. (2012). The evolutionary bases for sustainable behavior: Implications for marketing, policy, and social entrepreneurship. *Journal of Public Policy & Marketing*, 31, 115–128.
- Herman, C. P., Olmsted, M. P., & Polivy, J. (1983). Obesity, externality, and susceptibility to social influence: An integrated analysis. *Journal of Personality and Social Psychology*, 45, 926–934.
- Herman, C. P., Roth, D. A., & Polivy, J. (2003). Effects of the presence of others on food intake: A normative interpretation. *Psychological Bulletin*, 129, 873–886.
- Hill, J. O., & Peters, J. C. (1998). Environmental contributions to the obesity epidemic. *Science*, 280, 1371–1374.
- James, J. D., Breezeel, S., & Ross, S. (2001). A two-stage study of the reasons to begin and continue tailgating. *Sport Marketing Quarterly*, 10(4), 212–222.
- Layton, R. A. (2008). The search for a dominant logic: A macromarketing perspective. *Journal of Macromarketing*, 28, 215–227.
- Levett-Therivel Sustainability Consultants. (2005). *Sustainability implications of the little red tractor scheme*. London: Sustainable Development Commission.
- Macht, M. (2008). How emotions affect eating: A five-way model. *Appetite*, 50, 1–11.
- McDonald's. (2016). *Our approach to corporate social responsibility and sustainability*. Retrieved from www.aboutmcdonalds.com/mcd/sustainability/sustainability-approach.html
- McFerran, B., Dahl, D. W., Fitzsimons, G. J., & Morales, A. C. (2010). I'll have what she's having: Effects of social influence and body type on the food choices of others. *Journal of Consumer Research*, 36, 915–929.
- Meyers, A. W., Stunkard, A. J., & Coll, M. (1980). Food accessibility and food choice. A test of Schachter's externality hypothesis. *Archives of General Psychiatry*, 37, 1133–1135.
- Nestle, M. (2000). Soft drink "pouring rights": Marketing empty calories to children. *Public Health Reports*, 115, 308–319.
- Nisbett, R. E. (1968). *Determinants of food intake in human obesity*. *Science*, 159, 1254–1255.
- Pachucki, M. A., Jacques, P. F., & Christakis, N. A. (2011). Social network concordance in food choice among spouses, friends, and siblings. *American Journal of Public Health*, 101, 2170–2177.
- Raghunathan, R., Naylor, R. W., & Hoyer, W. D. (2006). The unhealthy=tasty intuition and its effects on taste inferences, enjoyment, and choice of food products. *Journal of Marketing*, 70(4), 170–184.
- Reisch, L., Eberle, U., & Lorek, S. (2013). Sustainable food consumption: An overview of contemporary issues and policies. *Sustainability: Science, Practice, & Policy*, 9(2), 7–25.
- Rogers, M. (2016, August 3). What will Olympians eat while in Rio? Too much. *USA Today*. Retrieved from www.usatoday.com/story/sports/olympics/rio-2016/2016/08/02/athletes-eat-food-mcdonalds/87968598/
- Rolls, B. J., Morris, E. L., & Roe, L. S. (2002). Portion size of food affects energy intake in normal-weight and overweight men and women. *The American Journal of Clinical Nutrition*, 76, 1207–1213.

- Sedlacko, M., Pisano, U., Berger, G., & Lepuschitz, K. (2013). Bridging the science-policy gap: Development and reception of a joint research agenda on sustainable food consumption. *Sustainability: Science, Practice, & Policy*, 9(2), 105–123.
- Shaw, H. J. (2006). Food deserts: Towards the development of a classification. *Geografiska Annaler: Series B, Human Geography*, 88, 231–247.
- Step toe, A., Pollard, T. M., & Wardle, J. (1995). Development of a measure of the motives underlying the selection of food: The food choice questionnaire. *Appetite*, 25, 267–284.
- Story, M., Neumark-Sztainer, D., & French, S. (2002). Individual and environmental influences on adolescent eating behaviors. *Journal of the American Dietetic Association*, 102(3), 40–51.
- Stroebe, W., Van Koningsbruggen, G. M., Papies, E. K., & Henk, A. (2013). Why most dieters fail but some succeed: A goal conflict model of eating behavior. *Psychological Review*, 120, 110–138.
- Stroebele, N., & De Castro, J. M. (2004). Effect of ambience on food intake and food choice. *Nutrition*, 20, 821–838.
- Tukker, A., Goldbohm, R. A., De Koning, A., Verheijden, M., Kleijn, R., Wolf, O., & Rueda-Cantuche, J. M. (2011). Environmental impacts of changes to healthier diets in Europe. *Ecological Economics*, 70, 1776–1788.
- UN. (1987). *Our common future*. World Commission on Environment and Development. Oxford: Oxford University Press.
- UN. (1992). *Agenda 21*. United Nations Conference on Environment and Development, Rio de Janeiro. New York, NY: United Nations.
- UN. (2015). *Resolution 70/1: Transforming our world: The 2030 Agenda for Sustainable Development*, adopted September 25, 2015. Document A/Res/70/1, October 21, 2015.
- Underwood, R., Bond, E., & Baer, R. (2001). Building service brands via social identity: Lessons from the sports marketplace. *Journal of Marketing Theory and Practice*, 9, 1–13.
- Van Ittersum, K., & Wansink, B. (2012). Plate size and color suggestibility: The Delboeuf Illusion's bias on serving and eating behaviour. *Journal of Consumer Research*, 39, 215–228.
- Vermeir, I., & Verbeke, W. (2006). Sustainable food consumption: Exploring the consumer “attitude – behavioral intention” gap. *Journal of Agricultural and Environmental Ethics*, 19, 169–194.
- Wansink, B. (1996). Can package size accelerate usage volume? *Journal of Marketing*, 60, 1–14.
- Wansink, B. (2006). Nutritional gatekeepers and the 72% solution. *Journal of the American Dietetic Association*, 106, 1324–1327.
- Weiffenbach, J. M., & Bartoshuk, L. M. (1992). Taste and smell. *Clinics in Geriatrics Medicine*, 8, 543–555.
- Werle, C. O., Trendel, O., & Ardito, G. (2013). Unhealthy food is not tastier for everybody: The “healthy=tasty” French intuition. *Food Quality and Preference*, 28, 116–121.
- Williams, C. T., & Williams, A. S. (2013). Hitting calories out of the ballpark: An examination of the FDA's new menu labeling laws and their impact on sports spectatorship. *Loyola Consumer Law Review*, 25, 248–265.
- Wing, R. R., & Jeffery, R. W. (2001). Food provision as a strategy to promote weight loss. *Obesity Research*, 9, 271–275.

13

CORPORATE SOCIAL RESPONSIBILITY CAMPAIGNS AND SPORTS SPONSORSHIP

Employee responses

Martin R. Edwards

This chapter focuses on potential employee responses to organizational activities linked to socially responsible and sustainable behavior as well as employer investment in sports sponsorship. The chapter takes an overarching framework of considering corporate social responsibility (CSR) from a stakeholder perspective, as it is important to recognize that CSR programs will usually be multifaceted and involve a complex set of activities that will have implications for multiple stakeholders (Wang, Tong, Takeuchi, and George, 2016). Historically, although many researchers have explored the potential impact of CSR programs from an external point of view when looking at the potential impact of CSR investment (thus considering CSR from a macro perspective; Aguinis & Glavas, 2012), in recent years a growing body of literature and research has explored the impact of CSR investment on employees. In reviewing this research, the idea that employees may respond in different ways to their employer acting with social responsibility toward different stakeholders enables us to speculate on processes that may explain varied responses to particular types of CSR activities. In doing this we can begin to understand the complexities of potential employee responses to CSR, which enables us to theorize expected employee responses to variations in sports sponsorship campaigns.

The importance of CSR

There is a general recognition that there has been a growth of organizations showing interest in acting in a socially responsible way (Bertels & Pelozo, 2008; Maignan & Ralston, 2002). In this context, the importance of focusing on *employee* responses to CSR should be obvious, in that “the people make the place” (Schneider, 1987) and where organizations want to be considered as acting with social responsibility, this requires the employees to “buy in” to CSR-based principles. It is therefore interesting that the research focusing on employee responses to CSR is still largely in its infancy. Whether an organization is authentic when it embarks on a CSR program or whether such activities are a tick box exercise initiated in order to be seen to “keep up with the Joneses” (Bertels & Pelozo, 2008, p. 62), how employees respond to judgments of their employers’ credentials, and indeed corporate claims of CSR activities, is likely to have profound implications. As research is beginning to show (to be discussed more fully later), employees who

judge their organizations as acting with social responsibility are associated with many positive outcomes such as pride, commitment, and increased performance (e.g., Farooq, Farooq, & Jasimuddin, 2014; Jones, 2010; Vlachos, Panagopoulos, & Rapp, 2014).

Possible employee responses to CSR activities

When reviewing research that explores employee responses to CSR from the last decade or so, it is apparent that where employees perceive their employer to act in a socially responsible way, positive responses often follow. Following is a summary review of recent research that has explored what the potential responses might be – specifically from an employee point of view. Employees, being on the inside of the organization and being witnesses to how their employer acts on a daily basis, are perfectly placed to form a judgment of whether their employer acts with socially responsible behavior. They are well positioned to judge whether CSR claims made by an organization are authentic (or not); they are well placed to judge whether their employer “walks the talk.” Over the last decade or so, evidence has begun to accumulate showing that when these judgments and perceptions are positive, employees are more likely to respond in a range of positive ways.

Researchers have found evidence that where employees judge their organization to be acting with social responsibility they tend to demonstrate *higher levels of pride* (Edwards, 2016; Ellemers, Kingma, Vande Burgt, & Barreto, 2011; Jones, 2010) and that they are more likely to consider their organization as having higher levels of *perceived external prestige* (Kim, Lee, Lee, & Kim, 2010). Furthermore, employees who judge their organization to act with social responsibility demonstrate *higher levels of trust* in their organization (Farooq, Payoud, Merunka, & Valette-Florence, 2013).

When employees judge their organization to act with social responsibility, they show higher levels of *organizational identification* (De Roeck, Marique, Stinglehamber, & Swaen, 2014; Edwards & Edwards, 2013; Edwards, 2015), and a body of research exists that shows a link between CSR perceptions and *higher levels of organizational commitment* (Brammer, Millington, & Rayton, 2007; Hofman & Newman, 2014; Maignan, Ferrell, & Hult, 1999; Turker, 2008). Another positive job-related attitude that has been found to be associated with employees’ judgments that their organization to act with social responsibility is *job satisfaction* (De Roeck et al., 2014; Ellemers et al., 2011).

Beyond employee psychological, affective-based, and attitudinal responses to perceptions of CSR actions, a *range of behavioral-based responses* have also been found to be associated with judgements of CSR. These responses range from increases in *extra-role behavior* and *organizational citizenship behavior* (Evans & Davis, 2014; Jones, 2010; Kim et al., 2010; Rupp, Shao, Thornton, & Skarlacki, 2013), *knowledge sharing behavior* (Farooq et al., 2014; Newman, Nielsen, & Miao, 2015; Vlachos et al., 2014), *increased discretionary effort* (Edwards, 2015; Edwards & Edwards, 2013), and *reduced levels of employee deviance* (Evans & Davis, 2014). Furthermore, research has also shown specific links between positive employee perceptions of CSR and *higher ratings of employee performance* (Carmeli et al., 2007; Edwards & Kudret, 2017; Jones, 2010; Maignan, Ferrell, & Hult, 1999; Newman et al., 2015; Vlachos et al., 2014), *increased customer loyalty* (Maignan et al., 1999), and *reduced intentions to leave* the organization (Edwards & Edwards, 2013; Jones, 2010).

With all of this evidence accumulating, from a human resource perspective, the case for ensuring that the organization acts in a socially responsible manner is extremely strong. The argument that “doing good is good for business” has some considerable weight from an employee-outcome point of view.

Possible triggers of employee responses: theoretical foundations explaining responses

Within the many research papers presented earlier are a number of theoretical discussions that set out and account for the vast array of possible employee responses to organizational CSR initiatives. Some of the key theoretical arguments presented that help explain employee responses are drawn from existing theory linked to justice and fairness. Cropanzano, Byrne, Bobocel, and Tipp (2001) set out three possible ranges of response to justice and fairness, which have been equated with internal facing CSR by Rupp (2011) and discuss a range of theories that might account for the responses. These include an instrumental model (where observing an employer acting with fairness reduces uncertainties employees may have about their organization), the group-value/relational model, and the deontic model. Many of these theoretical themes are discussed, specifically related to CSR, by Rupp and colleagues (e.g., Rupp, 2011; Rupp et al., 2013). However, in reviewing the earlier research, four main theoretical frameworks have been used to explain employee reactions to CSR – social identity theory, justice theory, social exchange theory, and deontic theory – and they are set out next.

Social identity theory arguments

Dutton Dukerich, and Harqail (1994) argued that working for a socially responsible organization will increase employees' sense of moral worth and pride in the organizations that they are associated with. The argument revolves around the idea that the positive sense of self-worth and positive evaluations experienced by employees who judge their organizations to act with social responsibility will lead to a much greater likelihood that they feel a sense of pride and bond psychologically with their employers. People are more likely to link their identities with a group that offers them the opportunity to bask in its reflected glory (Cialdini, Borden, Thorne, Walker, Freeman, & Sloan, 1976); thus, employees will identify to a greater degree. Such arguments neatly fit within social identity theory (Tajfel & Turner, 1979). Much of the earlier research supports some of the central social identity theory proposition, and employees respond well when their employer is considered to be “doing good.”

Justice theory arguments

A large body of literature exists that argues for the importance of perceptions of organizational justice in leading to a positive employee response (Colquitt, Conlon, Wesson, Porter, & Ng, 2001; Colquitt et al., 2013). When employees perceive their employer to be acting in a fair and just way, a suite of positive outcomes (both for the employee and the employer) are often found to follow (e.g., organizational commitment, organizational citizenship behavior, and performance. As mentioned previously, Rupp (2011) has transferred many of the arguments found in the justice literature to help explain employee responses to CSR perceptions. Rupp makes a distinction between “looking in” versus “looking out” and argues that CSR perceptions represent outward facing justice behavior (fair and just treatment of external stakeholders can be equated with CSR activities directed toward external stakeholders).

Amongst the theoretical arguments that help explain why employees might react positively to organizational justice include the idea that, through a social exchange, employees respond positively as a form of reciprocation (Cropanzano, Byrne, Bobocel, & Rupp, 2001). Evidence that there is a relationship between commitment (as a social exchange response) and justice is an extremely consistent finding (Colquitt et al., 2013). Key, however, are arguments linked to the

social identity theory related justice theories of group-value model (Lind & Tyler, 1988; Tyler, 1990) and the group engagement model (Tyler & Blader, 2003); key elements of these models can also be applied to CSR perceptions. In particular, the central idea associated with these theories is that employees obtain important information about their organization when observing just treatment; seeing their employer act fairly and with procedural justice suggests to employees that it respects and supports them. Where employees feel that their employer supports and respects them, they are more likely to trust the organization as a result. Therefore applying these justice arguments to CSR, Rupp argues that seeing their employer act with respect toward a range of stakeholders can help increase the likelihood that employees trust the organization; organizational trust has been found to be associated with a range of positive outcomes such as citizenship behavior, organizational commitment, and performance (Colquit, Scott, & Lepine, 2007).

Social exchange arguments

As mentioned, linked to the justice theory explanation, a key argument presented by organizational theorists that explain positive employee responses to CSR is that witnessing their employer acting with social responsibility will trigger a social exchange process; employees should respond by building a socio-emotional bond with the organization as a reciprocation in a social exchange process (Rupp, 2011; Rupp et al., 2013), particularly when the employer acts with social responsibility toward the *employee*. An important element of this argument is that employees are likely to draw inferences from how their organization treats them (and others), and seeing their organization acting with social responsibility reduces some uncertainty associated with the employment relationship; this helps alleviate or satisfy employees' need for control (Rupp, 2011). The fulfilment or satisfaction of certain instrumental needs can trigger affect-based responses such as commitment (Meyer et al., 2002). Thus, arguments presented by social exchange theorists can help explain why employees may respond with an affective-based bond or commitment when employees judge their organization to act with social responsibility.

Deontic motive arguments

A distinct additional theoretical explanation that has also been presented that should explain employee responses to CSR is linked to the deontic model (Folger, 1998; Folger & Skarlicki, 2008). Explicitly applied as a way of explaining possible non-instrumental employee responses to CSR by Rupp (2011), she explains that CSR should be considered by employees as the "right thing to do." This in and of itself should trigger positive responses in employees without the requirement that they get to gain anything from witnessing that their employer is acting in an ethical manner. Rupp argues that seeing an employer acting in a socially responsible way should trigger a "deontic" motive in employees; this can often lead to employees themselves acting in an ethical socially responsible way. This theoretical strand may potentially help explain instances where employees witness moral and socially responsible action from their employer and they are then found to do the same even though they may have nothing to gain from responding in this way.

CSR initiatives resulting in socially responsible employee behaviors

There may be a multitude of reasons why an organization could make socially responsible claims; some organizations may follow this course purely to manage their external reputation or image to outsiders. Employees, however, will be well placed to judge the legitimacy or

authenticity of CSR claims. One would expect that the degree to which employees see their organization as acting with social responsibility will influence the degree to which they themselves act with responsibility in the workplace. Research by Treviño and Weaver (2001) showed that where employees indicated that their organization demonstrated ethics program “follow-through,” these employees were more likely to show commitment to the organization’s ethical framework. This finding implies that in order to have a positive impact on employee ethical behavior, CSR initiatives need to be more than just a public relations campaign.

If an organization hopes for a CSR initiative to have a positive impact on employee socially responsible behavior, then it needs to be authentic in its claims and set the moral tone for the employees; Cropanzano and Stein (2009) refer to this as the “trickle-down effect” (p. 202). There may be a number of theoretical explanations for such a trickle-down effect; some of these may already have been mentioned here (e.g., the deontic motive). Brown, Treviño, and Harrison (2005) also put forward a social learning theory approach (where someone models her or his behavior on someone else’s behavior) as an explanation for why employees may follow suit and act in an ethical manner when they themselves see ethical behavior (and would expect socially responsible behavior to follow the observed CSR). Thus, we can draw on a range of possible explanations to understand why employees may act in a socially responsible way. However, if an organization expects employees to act in a socially responsible way, then the organization itself will need to be authentic and act with social responsibility.

Employee responses to socially responsible activities targeted toward a variety of stakeholders

The research outlined earlier sets out a range of different employee outcomes that have been found to be related to employee perceptions that their employer acts in a socially responsible way; as demonstrated, the potential positive outcomes are considerable. However, when presenting the research in this way, some of the complexities in employee responses are washed over. In particular, the summary of the potential outcomes of CSR noted earlier does not take into account that different types of CSR activities targeted at different stakeholders may lead to differential responses in employees.

As mentioned, this chapter takes a stakeholder perspective on CSR, but there are many definitions of CSR that one can draw on when considering CSR. Recent definitions focus on the importance of considering stakeholders, however. For example, according to Aguinis and Glavas (2012), CSR entails “context-specific organizational actions and policies that take into account stakeholders’ expectations and the triple bottom line of economic, social, and environmental performance” (p. 933). Also, Turker (2009) defines CSR as “corporate behaviors that aim to affect stakeholders positively and that go beyond [the organization’s] economic interest” (p. 413). The importance of taking a stakeholder perspective when considering CSR is underlined by Carroll (1991), who argues “there is a natural fit between the idea of corporate social responsibility and an organization’s stakeholders” as “the stakeholder nomenclature puts ‘names and faces’ on the societal members or groups who are most important to business and to whom it must be responsive” (p. 43). Stakeholders can be defined as “any group or individual who can affect or is affected by the achievement of the organization’s objectives” (Freeman, 1984, p. 46).

In a recent *Academy of Management Journal* editorial discussion, Wang et al. (2016) present arguments that CSR initiatives are complex and may have a varied impact on stakeholders. To fully understand the potential impact of CSR activities, researchers need to take this complexity into account and examine the degree to which organizations’ CSR initiatives serve the interests

of different stakeholder foci, especially as sometimes these interests may conflict. Interestingly, much of the research set out earlier that explores employee responses to their organizations' CSR credentials does not try to explore perceptions of stakeholder foci that the CSR initiatives is targeted toward (e.g., Carmeli et al., 2007; Jones, 2010; Peterson, 2004, Vlachos et al., 2014). There are exceptions to this, however, as some recent researchers have specifically explored employee responses to CSR initiatives that act in the interests of particular (and varied) social and non-social stakeholder foci. Some of the stakeholders included in these studies include customers, local community, the environment, shareholders, employees, society, and government (Edwards & Kudret, 2017; Ellemers et al., 2011; Farooq et al., 2014; Hofman & Newman, 2014; Newman et al., 2015; Turker, 2008, 2009).

An interesting feature of this recent research is that employees do not necessarily respond equally to organizational CSR initiatives that serve the interests of these varied stakeholders. For example, Edwards and Kudret (2017) found that employees do not respond as positively when they perceive that their employer acts in the interests of shareholders compared to when they perceive that their employer acts in the interests of the community or when it acts in a responsible way toward the environment. In addition, as another example, Hofman and Newman (2014) showed that employees respond more positively to perceptions that their organizational CSR initiatives act in interests of employees compared to perceptions that the initiatives operate in the interests of external stakeholders such as communities.

Which stakeholder target will trigger what process?

One of the important questions raised in studies on the impact of CSR initiatives is what psychological process may be triggered in employees when they see their employer acting positively (with social responsibility) toward particular stakeholders. If, as set out earlier, a variety of theoretical processes may occur when employees observe CSR in their employer, some of these processes may only be triggered when certain stakeholder interests are served. Given the potential variety of employee responses that the aforementioned research has found, it is highly likely that particular responses may only be triggered by CSR treatment targeted toward particular stakeholder (as discussed by Edwards & Kudret, 2017). As discussed later, understanding the complexities of the psychological mechanisms at play can help organizations build expectations around the likely differentiated responses that might be found, with CSR focused on paying attention to particular stakeholders. One can do this by mapping possible psychological processes onto particular stakeholder foci treatment with a view to understanding particular responses. Furthermore, one can draw on existing theoretical work and research findings in order to make some predictions about expected employee responses to CSR initiatives that are targeted at particular stakeholders.

Table 13.1 sets out some particular predictions drawing on arguments made by Edwards and Kudret (2017), who draw on existing theorizing in the literature. They consider multi-foci employee responses within a "looking in" and CSR "looking out" framework (set out by Rupp, 2011). Rupp (2011) makes a distinction between CSR "looking in" and CSR "looking out" and suggests that there may be different psychological processes occurring when an employee sees their employer act in a socially responsible way toward employees compared to external stakeholders. Employee focused CSR is most likely to trigger social exchange processes because as employees feel supported, they arguably feel an obligation to reciprocate often leading to a socio-emotional relationship based response of increased organizational commitment. Thus, employee CSR is most likely to lead to a social exchange trigger (see Table 13.1).

Table 13.1 Likely employee response and mechanisms triggered linked by particular stakeholder CSR foci

Positive Stakeholder Treatment Foci	Expected Response Mechanism Trigger				Expected Employee Response			
	1) Social Identity Theory Trigger	2) Justice Theory Trigger	3) Social Exchange Trigger	4) Deontic Motive Trigger	Expected Response Evaluative response Pride and prestige	Expected Response Affective response Organizational Commitment	Expected Response Behavioral response Performance & Citizenship	Expected Response Socially responsible/ethical behaviors
Employee	-	✓	✓	-	✓	✓	✓	-
Community	✓	✓	-	✓	✓	✓	-	✓
Customer	✓	✓	-	✓	✓	✓	-	✓
Environment	✓	✓	-	✓	✓	✓	-	✓
Society	✓	✓	-	✓	✓	✓	-	✓
Shareholder	✗ ✗	✗ ✗	-	-	✓	-	-	-

Note. Based on arguments presented in Edwards and Kudret (2017).

Where employees see their employer act with CSR toward social and non-social external groups (that do not immediately lead to a benefit for the organization), this can trigger a social identity response as it can lead to a positive evaluation of the organization, which may increase a sense of pride and perceived external prestige. As Rupp (2011) and Rupp et al. (2013) argue, CSR targeted toward external stakeholders may also trigger a process that does not involve a self-interest for the employee but one based on judgments of the organization “doing the right thing.” Where the organization is considered to be acting morally, those driven by a deontic motive are likely to respond in a socially responsible way when they see their organization acting with social responsibility to external stakeholders.

An interesting finding made by Edwards and Kudret (2017) was that when CSR treatment toward other stakeholders is taken into account, where employees make a judgment that employer acts in the interests of shareholders, employees are not found to respond positively at all. Edwards and Kudret interpret this as indicating that a primary focus on serving the interests of shareholders represents a financial “bottom-line” (i.e., profit) focus where the organization will be seen (by employees) as acting in economic self-interest (Clarkson, 1995). This is unlikely to lead to a positive psychological response with employees (other stakeholders may end up suffering with such an approach). The bottom-left corner cells in Table 13.1 show both a checkmark and an *X* under social identity theory and justice theory columns because even though economic self-interest is unlikely to trigger these responses, employees may (under certain conditions) perceive this to be fair as the interests of invested shareholders are considered (who have channeled resources into the organization). It is also possible that chasing profits might lead to the firm being considered a high performer (in financial terms), which may lead to a perception of perceived external prestige. These possible positive responses would however depend upon the degree to which other stakeholders are also considered.

Sports sponsorship as a form of CSR investment

As mentioned earlier, this chapter is focusing on exploring employee responses to organizational CSR initiatives, and the aim is to consider the degree to which knowledge of research on this area helps us understand potential employee responses to an organization investing in sports sponsorship. Before discussing the potential CSR element to sports sponsorship, it is important to consider what is meant by this “sponsorship” term. Meenaghan’s (1983) refers to sponsorship as “the provision of assistance either financial or in-kind to an activity by a commercial organization for the purpose of achieving commercial objectives” (p. 9). In connection with sporting activities, this involves organizations providing financial support to events, teams, or even individuals that ultimately helps fund either the sporting activities themselves or participation in them. Importantly, with sports sponsorship, an organization may not necessarily be making these investments as a socially responsible initiative; the investment may be made purely as a way to help “corporate objectives by enhancing corporate image, increasing awareness of brands, or directly stimulating sales of products and services” (Javalgi, Traylor, Gross, & Lampman, 1994, p. 48). This can help to “leverage” an organization’s corporate reputation (Dolphin, 2003; Javalgi et al., 1994; Meenaghan, 1991). However, a number of authors have discussed the potential for sports sponsorship to be seen as a form of socially responsible investment (Edwards, 2016; Hemsley, 2009; Bloom, Hoeffler, Keller, & Basurto Meza, 2006; Plewa & Questar, 2011; Wind-Cowie & Wood, 2012). Here, the rationale is that “sponsoring sports events should increase the perception that a sponsoring organization is contributing to society” (Edwards, 2016, p. 724).

Although it is likely to be the case that investing in sports sponsorship will lead to potential corporate (financial) benefits, it is also highly possible that investing in a sporting event will be

viewed by employees as investment into an element of the community. Depending upon the nature of the event, it may also be considered by employees as an investment into the wider social good (as this investment is going to external parties rather than employees).

At the moment very little research exists that can help us fully understand expected employee responses to sports sponsorship; in particular, few studies can help us understand whether employees see such sponsorship as a CSR activity. As Plewa and Quester (2011) suggest, “The lack of research considering sports sponsorship in CSR is surprising” (p. 305). Despite this gap in the literature, one or two studies may be able to help us in this regard. For example, Zepf (2008) showed a positive relationship between organizational identification and employee perceptions of their employers’ sponsorship of a local sporting event. Additionally, Lee, Hung, and Chen (2012) showed a negative relationship between sponsorship support and turnover intentions. In one of the only longitudinal studies exploring these issues, Edwards (2016) presents evidence to support the idea that sports sponsorship is linked to employee perceptions of the employers’ CSR credentials. Edwards (2016) showed that employee support of their organization’s sponsorship of the Olympics was positively associated with a sense of pride in the organization and positive ratings of the organization’s CSR credentials (both these perceptions were related to an increase in identification and discretionary effort). Although research is in its infancy in this regard, evidence is growing that employees are likely to judge their sponsoring organization positively with regard to CSR.

The impact of the sport sponsorship: in what stakeholder is the organization investing? What and who benefits/suffers?

The research and theory discussed earlier that consider the complexities in processes of employee responses to CSR initiatives can help us understand the potential employee responses to different types of sports sponsorship. It is likely with sports sponsorship, given the potential wide range of possible sporting events or activities an organization could sponsor, that the different types of events invested in are likely to lead to some variation in employee responses. For example, from an employee’s perspective, it is likely that he or she would perceive an employer’s sponsorship of a major international sporting event differently from a sponsorship of a local sports event or team, which may not get media coverage. These are qualitatively and quantitatively very different types of sponsorship initiatives. Importantly, the investment being channeled into the events will benefit very different stakeholders.

To understand the impact on employees that sponsorship activities may have, one needs to consider the likely perceptions that may develop regarding who or what benefits. To further explore these issues one could, for example, consider the potential benefit of sponsoring two different types of vehicular racing events. For example, sponsoring a solar-vehicle racing event (e.g., the American or World Solar Challenge) is likely to be benefiting quite different stakeholders and be seen as a different sports sponsorship initiative than the sponsorship of Formula 1 motor racing.

Sponsoring vehicles in the World Solar Challenge is likely to be seen as investing in the environment (as a non-social stakeholder) and very much be seen as CSR initiative; as such, the type of employee response that one would expect is likely to be positive. Employees may respond with pride and potentially this kind of investment may well lead to employees trusting the organization more and responding in a socially responsible way (as the deontic motive may be triggered). However, as Edwards (2016) argued with respect to global Formula 1 sponsorship, “Employees may respond differently to the sponsorship of such an event with regard to whether it leads to increased perceptions that their employer is acting with social responsibility due to

possible negative environmental consequences of motor sport” (p. 737). Thus, if a company is to invest in Formula 1, it is unlikely that employees will necessarily feel that their employer is investing in the environment. Having said this, employees may well still have a positive response such as a pride-based response due to the prestige and glamour associated with these events.

One of the challenges faced by potential researchers in the field (and indeed organizations making a sponsorship investment) is that it may not be straightforward to identify the potential perceived impact of a sponsorship activity or event. The impact of a particular sporting event on various stakeholders is likely to be complex, thus making it difficult to identify which stakeholder may or may not benefit. For example, major sporting events may well have a negative environmental impact but a positive long-term impact on urban development (thus benefiting the local community). However, identifying whether a particular sporting event would have a positive or negative impact may not be a straightforward process. For example, a major Olympics event (Summer or Winter) may well require the building of stadia or event spaces that negatively affect the environment. If an event required deforestation, for example, then this would have an obvious negative impact on the environment. However, the negative CSR impact of this may be partially offset if the event helped local urban development (which many Olympic Games require) and thus other community stakeholders may benefit. Furthermore, as Trendafilova, McCullough, Pfahl, Nguyen, Casper, and Picarielli (2014) discuss, it is possible that careful planning and construction of the Games can include sustainability projects, which could not only have less of a negative impact on the environment but could also help sustainability and environmental awareness; this could have a net positive impact in the long term.

With some forms of sports sponsorship, it will be more obvious what stakeholder benefits. For example, if an organization sponsors a local sporting event, then it is likely to be the local community that benefits. There is also the possibility that a range of stakeholder groups could all benefit from a particular event (e.g., employees, the community, society, and the environment); from an employee perspective, this should lead to a generally positive response. Theoretically, the events that have the most positive impact across a range of stakeholders should lead to the most positive responses.

Responses to high-profile sponsorship

Regardless of what stakeholder may benefit from sponsorship investment the most, it is likely that the higher the profile of the event that is sponsored, the greater the likelihood it is that employees feel a sense of increased prestige and increased sense of self-worth from being associated with the event. Thus, there may be similarities in the impact on employees of sponsorship of similar categories of high-profile sporting events (such as the Olympics or the FIFA World Cup; Edwards, 2016). The higher the profile the event, then potentially the more prestige-based pride than employees may feel by being associated with the event. Of course, if the organization decides to sponsor a particular high-profile sports team, some of the likely employee response may be linked to the success of the team itself and the degree to which the employees are able to “bask in the reflected glory” (Cialdini et al., 1976) of a winning team. The 66,000 employees of AON (the 2016 sponsor of Manchester United) may not feel so positive as the 7,000 employees of King Power (the 2016 sponsors of Leicester City, who came out on top of the Premier League division in May 2016). Indeed, the 28,000+ Gillette employees may feel quite good about the Patriots winning the 2016 Super Bowl (as Gillette was one of the major sponsors of the Patriots).

Of course, the argument that employees might feel a positive sense of pride by being associated with high-profile sporting events or teams assumes that employees care about the event

or the team in some way. It is highly likely that the responses to sponsorship will be nominal if the employee is so unconcerned about the event or so far removed from the event that it barely registers on their radar. For example, perhaps a McDonald's employee working in an out-of-the-way store may not even register the investment that their employer is making in the Olympics.

Furthermore, the flip side of the research findings presented by Edwards (2016) indicates that if employees do not support the sponsorship, they will exhibit less pride than those who do support it; similarly, they will rate the organization as having lower CSR credentials than those who do support the sponsorship. Therefore, the perceived reasons for the sponsorship will need to be carefully considered. As Edwards (2016) argues, a "key contingency, which may influence how employees respond, could be the *reasons* why the organization sponsored the events in the first place" (p. 736, emphasis added). An employee may respond differently if the organization is seen to have a genuine desire to invest in a sporting community compared to whether they judge their employer's investment as a profile building/image shaping initiative. Importantly, however, if the employees support the sponsorship in the first place (regardless of the reasons), the research indicates that positive responses may follow. As Walraven et al. (2012) argue, "To the extent that potential employees are aware of and favorably disposed to sponsorship(s) of an employer, they will exhibit a more positive attitude towards working for the firm" (p. 32).

Future directions for research

Vast sums of money are invested in sports sponsorship (argued to be as much as \$57 billion in total for 2015; IEG, 2015), given this and the potential importance of a whole range of possible employee responses to sponsorship, it is reasonable to argue that research needs to be conducted to truly understand the potential positive (or negative) impact that sports sponsorship may have on employees. It would, for example, be possible to conduct research exploring employee reactions to sponsorship of different types by surveying employee perceptions in firms that invest in different types of sponsorships. Additionally, diary studies could be conducted investigating how employees are affected when they observe or witness evidence of their employer's sponsorship of a high-profile sporting event. For example, if they see their company's logo on Olympic banners or in an advertisement when watching an event, or if they see the logo on a player's shirt in a team that is sponsored, do they swell with pride or respond with a sense of cynicism? It would be interesting to understand the extent to which any response to seeing evidence of their company's sponsorship of an event (or team) might be a short-term or long-term effect. Whatever the reaction, it would be important to understand the moderating factors that could determine particular responses (e.g., interest in the sport or support for the reasons given for the sponsorship investment in the first place).

To fully understand the potential impact that the sponsorship may have on employees and the underlying processes of these responses, researchers need to consider a range of possible contextual contingencies that could play an important role. For example, how high-profile is the sporting event and its associated sponsorship? The higher the profile of the event, the more likely employees may respond with a sense of pride due to the potential associated prestige. Lower-profile events are more likely to lead to perceptions that the organization is investing in relevant stakeholders rather than sponsoring in order to boost the corporate image.

Linked to the discussion earlier concerning the expected employee response to CSR initiatives targeted toward different stakeholders, an important question to ask is what stakeholder is seen to benefit from the sponsorship. Identifying which stakeholder benefits may or may not be straightforward in some instances. When the organization sponsors an employee sports event or employee participation in a sporting activity, we might be able to assume that it is the

employee stakeholder group that benefits; with some sports sponsorship activities, this may not be so straightforward. In order for us to understand the impact of a CSR event on employees, it is important for us as researchers (and importantly for employees) to be able to identify the stakeholder(s) that benefit from an organization investing in an event. We need to be able to answer the question: Does the initiative benefit the local community, employees, customers, or the environment? Of course, some initiatives may affect more than one stakeholder; investment in a local sporting event may benefit the local community, but it could also have a positive or negative impact on the environment.

As researchers, we need to be able to answer a range of questions when considering the impact of sports sponsorship, and the nature of the impact could be complex. For example, can we identify a clear beneficiary to the CSR investment? Are there likely to be knock-on effects of the event that affect other stakeholders that are not immediately obvious? Is the sponsorship only likely to be benefiting the corporate image with a view to increase brand awareness and sales? Who benefits the most? Is it shareholders who benefit the most? These are all potential contextual factors (or research questions) that could be explored in future research to provide a better idea of the affect that sports sponsorship may have on employees. It is also important to explore different contexts where organizations have given different reasons for investing in sponsorship. This line of inquiry would enable researchers to get a sense of the possible impact that different strategic intent (on the part of the organization) has on employees, or if such sponsorship matters at all to employees.

As we can see from this discussion, the more one delves into existing research into the impact of sports sponsorship when considering future research directions, the more questions are raised. It is clear that research considering employee reactions to sports sponsorship is in its infancy. However, as discussed, the emerging research exploring employee responses to CSR from a stakeholder perspective can begin to provide a useful theoretical framework for researchers who are considering avenues for future research projects in the area.

References

- Aguinis, H., & Glavas, A. (2012). What we know and don't know about corporate social responsibility: A review and research agenda. *Journal of Management*, *38*, 932–968.
- Bertels, S., & Pelozo, J. (2008). Running to stand still: Managing CSR reputation in an era of rising expectations. *Corporate Reputation Review*, *54*, 57–67.
- Bloom, P. N., Hoeffler, S., Keller, K. L., & Basurto Meza, C. E. (2006). How social-cause marketing affects consumer perceptions. *Sloan Management Review*, *47*, 49–55.
- Brammer, S., Millington, A., & Rayton, B. (2007). The contribution of corporate social responsibility to organizational commitment. *The International Journal of Human Resource Management*, *18*, 1701–1719.
- Brown, M., Treviño, L. K., & Harrison, D. (2005). Ethical leadership: A social learning perspective for construct development and testing. *Organizational Behavior and Human Decision Processes*, *97*, 117–134.
- Carmeli, A., Gilat, G., & Waldman, D.A. (2007). The role of perceived organizational performance in organizational identification, adjustment and job performance. *Journal of Management Studies*, *44*, 972–992.
- Carroll, A. B. (1991). The pyramid of corporate social responsibility: Toward the moral management of organizational stakeholders. *Business Horizons*, *34*, 39–48.
- Cialdini, R. B., Borden, R. J., Thorne, A., Walker, M. R., Freeman, S., & Sloan, L. B. (1976). Basking in reflected glory: Three (football) field studies. *Journal of Personality and Social Psychology*, *34*, 366–375.
- Clarkson, M. B. E. (1995). A stakeholder framework for analyzing and evaluating corporate social performance. *Academy of Management Review*, *20*, 92–117.
- Colquitt, J.A., Conlon, D.E., Wesson, M.J., Porter, C. O., & Ng, K.Y. (2001). Justice at the millennium: A meta-analytic review of 25 years of organizational justice research. *Journal of Applied Psychology*, *86*, 425–445.
- Colquitt, J.A., Scott, B.A., & LePine, J.A. (2007). Trust, trustworthiness and trust propensity: A meta analytic rest of their unique relationships with risk taking and job performance. *Journal of Applied Psychology*, *92*, 909–927.

- Colquitt, J. A., Scott, B. A., Rodell, J. B., Long, D. M., Zapata, C. P., & Conlon, D. E. (2013). Justice at the millennium, a decade later: A meta-analytic test of social exchange and affect-based perspectives. *Journal of Applied Psychology, 98*, 199–236.
- Cropanzano, R., Byrne, Z. S., Bobocel, D. R., & Rupp, D. E. (2001). Moral virtues, fairness heuristics, social entities, and other denizens of organizational justice. *Journal of Vocational Behaviour, 58*, 164–209.
- Cropanzano, R., & Stein, J. H. (2009). Organizational justice and behavioral ethics: Promises and prospects. *Business Ethics Quarterly, 19*, 193–233.
- De Roeck, K., Marique, G., Stinglhamber, F., & Swaen, V. (2014). Understanding employees' responses to corporate social responsibility: Mediating roles of overall justice and organizational identification. *The International Journal of Human Resource Management, 25*, 91–112.
- Dolphin, R. R. (2003). Sponsorship: Perspectives on its strategic role. *Corporate Communications, 8*, 173–186.
- Dutton, J. E., Dukerich, J. M., & Harquail, C. V. (1994). Organizational images and member identification. *Administrative Science Quarterly, 39*, 239–263.
- Edwards, M. R. (2016). The Olympic effect: Employee reactions to their employer's sponsorship of a high-profile global sporting event. *Human Resource Management*.
- Edwards, M. R., & Edwards, T. (2013). Employee responses to changing aspects of the employer brand following a multinational acquisition: A longitudinal study. *Human Resource Management, 52*, 27–54.
- Edwards, M. R., & Kudret, S. (2017). Multi-foci CSR perceptions, procedural justice and in-role employee performance: The mediating role of commitment and pride. *Human Resource Management Journal, 27*, 169–188.
- Ellemers, N., Kingma, L., van de Burgt, J., & Barreto, M. (2011). Corporate social responsibility as a source of organizational morality, employee commitment and satisfaction. *Journal of Organizational Moral Psychology, 1*, 97–124.
- Evans, W. R., & Davis, W. (2014). Corporate citizenship and the employee: An organizational identification perspective. *Human Performance, 27*, 129–146.
- Farooq, M., Farooq, O., & Jasimuddin, S. M. (2014). Employees response to corporate social responsibility: Exploring the role of employees' collectivist orientation. *European Management Journal, 32*, 916–927.
- Farooq, O., Payout, M., Merunka, D., & Valette-Florence, P. (2013). The impact of corporate social responsibility on organizational commitment: Exploring multiple mediation mechanisms. *Journal of Business Ethics, 125*, 563–580.
- Folger, R. (1998). Fairness as a moral virtue. In M. Schminke (Ed.), *Managerial ethics: Moral management of people and processes* (pp. 13–34). Mahwah, NJ: Erlbaum.
- Folger, R., & Skarlicki, D. P. (2008). The evolutionary bases of deontic justice. In S. W. Gilliland, D. D. Steiner, & D. P. Skarlicki (Eds.), *Research in social issues in management: Justice, morality, and social responsibility* (Vol. 6, pp. 29–62). Charlotte, NC: Information Age.
- Freeman R. E. (1984). *Strategic management: A stakeholder approach*. Boston: Pitman.
- Hemsley, S. (2009). Corporate social responsibility and sports sponsorship: How sport helps business fulfil CSR obligations. *International Marketing Reports*. Available from www.imrpublications.com/overview.aspx?sid=22&rid=1
- Hofman, P. S., & Newman, A. (2014). The impact of perceived corporate social responsibility on organizational commitment and the moderating role of collectivism and masculinity: Evidence from China. *The International Journal of Human Resource Management, 25*, 631–652.
- IEG. (2015). *Sponsorship spending report: Where the dollars are going and trends for 2015*. Retrieved from www.sponsorship.com/IEG/files/4e/4e525456-b2b1-4049-bd51-03d9c35ac507.pdf
- Javalgi, R. G., Traylor, M. B., Gross, A. C., & Lampman, E. (1994). Awareness of sponsorship and corporate image: An empirical investigation. *Journal of Advertising, 23*, 47–58.
- Jones, D. (2010). Does serving the community also serve the company? Using organizational identification and social exchange theories to understand employee responses to a volunteerism programme. *Journal of Occupational and Organizational Psychology, 83*, 857–878.
- Kim, H. R., Lee, M., Lee, H. T., & Kim, N. M. (2010). Corporate social responsibility and employee-company identification. *Journal of Business Ethics, 95*, 557–569.
- Lee, D., Hung, L., & Chen, M. (2012). Empirical study on the influence among corporate sponsorship, organizational commitment, organizational cohesiveness and turnover intention. *Journal of Management and Sustainability, 2*, 43–54.

- Lind, E. A., & Tyler, T. R. (1988). *The social psychology of procedural justice*. New York: Plenum.
- Maignan, I., Ferrell, O. C., & Hult, G. T. M. (1999). Corporate citizenship: Cultural antecedents and business benefits. *Journal of the Academy of Marketing Science*, 27, 455–469.
- Maignan, I., & Ralston, D. A. (2002). Corporate social responsibility in Europe and the U.S.: Insights from businesses' self-presentations. *Journal of International Business Studies*, 33, 497–514.
- Meenaghan, T. (1983). Commercial sponsorship. *European Journal of Marketing*, 17, 1–74.
- Meenaghan, T. (1991). Sponsorship: Legitimising the medium. *European Journal of Marketing*, 25, 5–10.
- Meyer, J. P., Stanley, D. J., Herscovitch, L., & Topolnysky, L. (2002). Affective, continuance, and normative commitment to the organization: A meta-analysis of antecedents, correlates, and consequences. *Journal of Vocational Behavior*, 61, 20–52.
- Newman, A., Nielsen, I., & Miao, Q. (2015). The impact of employee perceptions of organizational corporate social responsibility practices on job performance and organizational citizenship behavior: Evidence from the Chinese private sector. *The International Journal of Human Resource Management*, 26, 1226–1242.
- Peterson, D. K. (2004). The relationship between perceptions of corporate citizenship and organizational commitment. *Business & Society*, 43, 296–319.
- Plewa, C., & Quester, P. G. (2011). Sponsorship and CSR: Is there a link? A conceptual framework. *International Journal of Sports Marketing and Sponsorship*, 12(4), 22–38.
- Rupp, D. E. (2011). An employee-centered model of organizational justice and social responsibility. *Organizational Psychology Review*, 1, 72–94.
- Rupp, D. E., Shao, R., Thornton, M. A., & Skarlicki, D. P. (2013). Applicants' and employees' reactions to corporate social responsibility: The moderating effects of first-party justice and moral identity. *Personnel Psychology*, 66, 895–933.
- Trendafilova, S., McCullough, B. P., Pfahl, M., Nguyen, S. N., Casper, J., & Picariello, M. (2014). Environmental sustainability in sport: Current state and future trends. *Global Journal on Advances Pure and Applied Sciences*, 3, 9–14.
- Treviño, L. K., & Weaver, G. R. (2001). Organizational justice and ethics program “follow-through”: Influences on employees' harmful and helpful behavior. *Business Ethics Quarterly*, 11, 651–671.
- Treviño, L. K., Weaver, G. R., & Reynolds, S. J. (2006). Behavioral ethics in organizations: A review. *Journal of Management*, 32, 951–990.
- Turker, D. (2008). How corporate social responsibility influences organizational commitment. *Journal of Business Ethics*, 89, 189–204.
- Turker, D. (2009). Measuring corporate social responsibility: A scale development study. *Journal of Business Ethics*, 85, 411–427.
- Tyler, T. R. (1990). *Why people obey the law: Procedural justice, legitimacy, and compliance*. New Haven, CT: Yale University Press.
- Tyler, T. R., & Blader, S. L. (2003). The group engagement model: Procedural justice, social identity, and cooperative behaviour. *Personality and Social Psychology Review*, 7, 349–361.
- Vlachos, P. A., Panagopoulos, N. G., & Rapp, A. A. (2014). Employee judgments of and behaviors toward corporate social responsibility: A multi-study investigation of direct, cascading, and moderating effects. *Journal of Organizational Behavior*, 35, 990–1017.
- Walraven, M., Koning, R. H., & van Bottenburg, M. (2012). The effects of sports sponsorship: A review and research agenda. *The Marketing Review*, 12, 17–38.
- Wang, H., Tong, L., Takeuchi, R., & George, G. (2016). Corporate social responsibility: An overview and new research direction. *Academy of Management Journal*, 59, 534–544.
- Wind-Cowie, M., & Wood, C. (2012). Measuring up: The social value of sponsorship. *Demos*. www.demos.co.uk/files/Measuring_Up_-_web.pdf
- Zepf, B. (2008). *Sponsorship as an internal marketing tool: Employees' sponsorship assessments and their effect on job attitudes* (Unpublished doctoral thesis), Florida State University, Tallahassee, Florida.

VANCOUVER, GREEN CAPITAL

The green business branding strategy of the host city of an Olympic Games

Joseph Weiler and Patrick Weiler

Six months before the 2010 Winter Olympic and Paralympic Games (the “Games”), the mayor of Vancouver, Gregor Robertson, in a speech to the Vancouver Board of Trade, launched an Olympic Games legacy economic development strategy under what he referred to as a new “business brand” of “Vancouver Green Capital.” The three main objectives of this business branding initiative were (1) to accelerate the already impressive record of growth in the sustainability performance of the city of Vancouver (the “city”); (2) to take strategic advantage of Vancouver’s reputation as one of the most livable cities in the world; and (3) to use the Games as an opportunity to attract new investment in Vancouver’s already robust green industrial sector so that the 2010 host city could become a world leader in the fast growing green economy. This economic development strategy was viewed by City Hall as a critical element of a larger community objective of Vancouver being recognized by 2020 as the “Greenest City on Earth.”

The Games provided the city with an unprecedented global media opportunity (in the words of Mayor Robertson) “to own green.” In the mayor’s speech to the Vancouver Board of Trade in September 2009, he outlined the steps Vancouver needed to take in order to achieve this goal. In a coordinated effort with the Vancouver 2010 Olympic Games Organizing Committee (VANOC), the regional municipal and provincial governments, 2010 Games sponsors, environmental non-governmental organizations (NGOs), local research universities, and leading green companies, the city set out to attract the requisite financing and talent that would be key to the future growth of Vancouver’s green economy.

Over the next seven years, this sustainability-oriented economic development strategy has proven to be very successful. Targeted green industrial sectors have grown, while at the same time, the city has been able to reach most of its sustainability performance targets. The objectives have evolved from its early stages of the initiating and accelerating change in economic development, to sustaining longer-term economic growth.

This chapter will describe:

- 1 How world-leading environmental designs for Games competition facilities, housing venues, and related infrastructure were developed and how they helped place Vancouver among the most successful of all Olympic cities at leveraging the Games-hosting opportunity to showcase local green building expertise and to advance other civic sustainability efforts.

- 2 How the host communities of the Games collaborated to launch a foreign direct investment (FDI) program aimed at attracting business activity in five targeted technology sectors, with particular emphasis on the advanced (clean) energy technology and digital media sectors, and how this business development strategy became a key catalyst to accelerate this transition.

Vancouver's "green credentials"

The civic culture of Vancouver has embraced sustainable growth strategies that stemmed from key policy decisions dating back over half a century. For example, in the 1960s, Vancouver residents stopped the construction of a freeway into the central business district that would have leveled important ethnic neighborhoods in the community, thereby altering the shape of the city forever. Because of the importance of retaining longstanding ethnic neighborhoods and heritage housing stock within those areas, Vancouver is one of few cities in North America that does not have a major highway cutting through its core. Vancouver is the birthplace to renowned environmental NGOs such as Greenpeace and the home of renowned Canadian conservationist, author, and television star Dr. David Suzuki. Vancouver is also one of the first major cities in the world to recognize the significance of climate change (City of Vancouver, 2015a). For these among other reasons, Vancouver had a credible claim to a business brand as a "green capital."

When the 2010 Bid Corporation submitted its Bid Book to the International Olympic Committee (IOC) in the spring of 2003, major themes of the Vancouver bid were its significant commitment to environmental and economic sustainability performance, as well as enhanced social inclusiveness that the Vancouver proponents claimed would set a new sustainability standard for future Games.

The Vancouver Bid Book singled out the objectives of creating green buildings, improving solid and liquid waste management, addressing air quality and greenhouse gas (GHG) management, and protecting the natural and cultural heritage of Vancouver and the surrounding regions.¹ These commitments indicated both the manner in which Vancouver intended to host the Games and its intention to utilize the Olympic stage to showcase environmentally sustainable expertise, technologies, and services with a particular emphasis on more sustainable transportation, energy management, and athletes' villages. Sustainable transportation initiatives included limitations on spectator parking at venues, use of event tickets for public transportation use, the use of low and zero-emission technology vehicles, and the creation of a hydrogen fueling infrastructure. Initiatives aimed at sustainable energy management emphasized energy management practices in buildings and optimized sourcing of green energy from BC Hydro (one of the Games domestic sponsors). The two Athletes' Villages (in Vancouver and Whistler) were singled out to be constructed with leading green building design elements, including efficient use of energy, water, and renewal building materials (VANOC, 2010).

Importantly, the Vancouver Athletes' Village was designed to be the centerpiece of a major urban renewal project to transform what had been a heavily industrialized and contaminated South False Creek area of Vancouver into a state-of-the-art, model sustainable neighborhood, housing 16,000 people and within an easy walk of the city center (VANOC, 2010).

The significant environmental and social sustainability elements of the Vancouver bid surpassed any that the IOC had received before. Consequently, when the IOC awarded the 2010 Games to Vancouver in July 2003, the promises in the bid to create lasting economic, environmental, and social legacies from the Games were important and distinguishing elements in what Vancouver set out to achieve as the host city for the 2010 Games.

The launch of the “Vancouver, Green Capital” Olympic Games–related business development brand

The Games presented an opportunity not only to showcase Olympic hosting operations sustainability performance achievements, but also to go further and to leave lasting sustainability legacies for the city. These legacies included (1) the built environment (i.e., the sport competition venues, the two Athletes’ Villages, the Trade and Convention Centre West (which during the Games served as the International Broadcast Centre); (2) the human capital legacy in the form of the development of local expertise for the teams of architects, engineers, and contractors involved in the design and construction of the many sustainability innovations that were incorporated in the new built environment; (3) human capital legacy of an inclusive sustainable sourcing and procurement strategy that favored economically disadvantaged groups²; (4) the public transportation infrastructure; (5) cutting-edge carbon reduction practices; and (6) the new public–private partnership experience that was gained by government, the private sector, and NGOs working effectively together.

In order to translate the expertise and momentum gained during the Olympic project into lasting long-term legacies of the Games, leadership at Vancouver City Hall launched the 10-year “Vancouver Green Capital” Plan in the lead up to the Games, with the goal of making Vancouver the “Greenest City in the World” by 2020. Through the implementation of the Green Capital Plan, the city hoped to achieve the complementary goals of immediately kick-starting the local green economy while boosting Vancouver’s broader sustainability objectives in the longer term.

To formulate this Games-related development strategy, the city commissioned the Greenest City Action Team (GCAT), a group composed of independent experts to determine what the city needed to do to become the greenest city in the world by 2020. The GCAT included representatives from green technology companies, politicians, lawyers, academics, environmentalist advocates, and VANOC (City of Vancouver, 2009b). This team developed and released an initial report entitled *Greenest City: Quick Start Recommendations* on April 27, 2009, that set out a host of recommended actions in three broad subject areas: jobs and the economy, greener communities, and human health that could be initiated and/or completed in time for the Games (City of Vancouver, 2009a). This report emphasized the following:

This Report rests on a single, critical assumption: there is no time to lose. Vancouver is already in the world’s spotlight in anticipation of the 2010 Winter Games. That event will be an opportunity to promote the City to prospective residents and potential businesses as an international exemplar.

(p. 1)

Building off of the recommendations mentioned earlier, Mayor Robertson launched the “Green Capital” business brand for the city on September 30, 2009, at a speech to the Vancouver Board of Trade. This business brand emphasized Vancouver’s status as a highly livable, highly green location in order to attract entrepreneurs, investment capital, and new head offices to the city. The strategy was to leverage Vancouver’s already earned “green credibility” and reputation as one of the world most livable cities to give Vancouver an important edge in international circles in attracting green business to the city (VanWynsberghe, Derom, & Maurer, 2012, p. 198).

A month later, *Vancouver 2020: A Bright Green Future*, the city’s 10-year plan to become the world’s greenest city, was released. This plan built upon the themes that were introduced in the Quick Start Recommendations – green economy, green jobs; greener communities; and human

Table 14.1 Vancouver 2020 targets

-
1. Green Economy Capital: 20,000 new green jobs
 2. Climate Leadership: Reduce greenhouse gas emissions 33% from 2007 levels
 3. Green Buildings: All new construction carbon neutral; improve efficiency of existing buildings by 20%
 4. Green Mobility: Make the majority of trips (50+%) on foot, bicycle, and public transit
 5. Zero Waste: Reduce solid waste per capita going to landfill or incinerator by 40%
 6. Easy Access to Nature: Every person lives within a five-minute walk of a park, beach, greenway, or other natural space; plant 150,000 additional trees in the city
 7. Lighter Footprint: Reduce per capita ecological footprint by 33%
 8. Clean Water: Always meet or beat the strongest of B.C., Canada, and World Health Organization drinking water standards; reduce per capita water consumption by 33%
 9. Clean Air: Always meet or beat World Health Organization air quality guidelines, which are stronger than Canadian guidelines
 10. Local Food: Reduce the carbon footprint of our food by 33% per capita
-

health – and set 10 measurable targets to be achieved by 2020 (see Table 14.1) (City of Vancouver, 2009b, p. 2). A key recognition of the city is that social sustainability is a vital component of its sustainability planning, and it therefore expanded its policy approach to target improvements in this area as well.

The Olympic Games media spotlight created the ideal conditions to nurture the advancement of the City's sustainability goals. As will be shown, many of the 2020 targets were given a boost by the Games project.

The 2010 Olympic Games sport competition venues and related infrastructure

Ambitious environmental designs of sport competition venues and major public transit investments were already promised in the bid stage, while the major construction projects by necessity led to the development of local capacity in the green building industry. Vancouver had targeted the U.S. Green Building Council's Leadership in Energy and Environmental Design (LEED) Silver certification for its sport competition venues as part of its bid. However, by the time they were built, many of the venues had incorporated even more ambitious environmental features such that they were able to meet or exceed LEED Silver certification. For example, the Vancouver Olympic/Paralympic Centre (curling), the ice hockey practice facility, and the VANOC office headquarters all obtained LEED Gold certification.

The rationale for pursuing the higher than Silver level of LEED certification was based both on environmental and economic considerations. At the time, LEED certification was relatively new in Canada and had yet to attract wide-ranging support among local stakeholders. Therefore, to support the decision to incorporate the requisite sustainability-focused features in the facility to attract a LEED Gold certification of the Hillcrest Olympic Curling venue, VANOC, with the support of the federal government ministry Environment Canada, commissioned a case study to help stakeholders understand the "business case" for seeking higher levels of LEED certification in new buildings. This report showed that, despite the added initial capital cost in incorporating this technology, over the medium term, the utility savings would more than compensate for the initial added investment over time (PricewaterhouseCoopers, 2009).

On the basis of this report, the features the study showed that offered the best economic return on initial investment were incorporated in the final design for the facility (such as those that

improved energy performance and water and resource consumption). The venue was recognized with a LEED Gold certification in due course. This report not only helped allay fears that the project would be unduly extravagant; it also provided a helpful tool for VANOC, the city, other Games venue planners, as well as served as a model precedent and strong rationale to illustrate the value for the host city's strategy to improve the environmental performance of all new buildings in the city.

With respect to environmental design, the most impressive project of the Games was the Vancouver athletes' village. Among its most notable innovative features are its rooftop gardens, rain-water collection and irrigation systems, and net-zero building (which produces as much energy as it uses). However, the most influential and innovative environmental element of the village is the district water heating system, called the Neighbourhood Energy Utility (NEU), which reuses heat from sewage water to heat water for the entire complex of buildings in the village. Due in large part to this system, all of the buildings in the athletes' village building stock have received either LEED Gold or Platinum certification, while the overall neighborhood received LEED Platinum certification (City of Vancouver, n.d.-a). During the 2010 Games, the Mayor of Vancouver proudly proclaimed to the world that this area was "the greenest neighborhood in the world" (Mayor of Vancouver, 2010).

The Games also served as the catalyst for a public-private partnership to construct the long-anticipated \$900 million Vancouver Trade and Convention Centre West, which served as the International Broadcasting Centre during the Games. This massive building became the first convention center in the world to receive LEED Platinum certification, due among other design elements to its energy use monitoring systems, energy efficient lighting, and the largest non-industrial living roof in North America (Vancouver Convention Centre, n.d.-a). In addition, the centre employs sustainability-sensitive facility operations and event management guidelines that ensure that nearly half of the building's waste is recycled and that 85 percent of the building's waste is diverted from landfills (Vancouver Convention Centre, n.d.-b).

2010 Olympic Games transportation management and infrastructure

The Games-time transportation system has had a profound impact on the long-term transportation strategy for the Greater Vancouver Region. Organizers were successful in reducing carbon emissions through promotion of public transit (which was provided at no cost for Olympic event ticket holders), the use of a low-carbon emission fleet by VANOC, and emphasis on walking and cycling as a means of transportation during the Games.³

Although not strictly an Olympic project, the long-awaited new rapid transit line (i.e., the Canada Line), linking Vancouver International Airport, the City of Richmond (home of the Olympic Speed Skating Oval), and downtown Vancouver, was able to attract the requisite financing as a Games-related infrastructure project. The Canada Line also has the effect of offsetting the equivalent of 10 lanes of auto emissions traffic.

Developing green jobs through a collaborative regional Olympic Games hosting strategy

As part of and in concert with the efforts of greening the city's operations and its impacts, the Vancouver Green Capital plan sought to attract new green jobs in the region. A critical objective of this strategy was to use the global media coverage of the Games to attract the human resources talent and financial muscle needed to build equity in its new business brand of "Vancouver Green Capital." This campaign became an integral part of a larger technology

and industry-focused collaborative business development hosting strategy of nine local regional municipalities⁴ to leverage the Games to attract longer-term, carbon-friendly business development in the region.

In order to pursue this regional development strategy, these nine municipalities officially launched the “Metro Vancouver Commerce 2010 Business Program” (MVC) on November 9, 2009, three months before the Games. This FDI program targeted foreign businesses in specific industrial sectors in order to match them with local public and private counterparts for business conferencing, trade shows, and other social gatherings with the additional draw and backdrop of being hosted by the local counterparts at various Olympic events.

An investment of C\$700,000 from participating municipalities and local companies leveraged a contribution of C\$800,000 from the Government of Canada’s Ministry of Western Economic Diversification fund. The objective was to promote local businesses and attract new investment by taking strategic advantage of the Olympic Games media spotlight and the lure of attending the best sporting events at the Games in prime seats (Luba, 2010).

The focal point of the “Vancouver, Green Capital” Games time hosting strategy was the Vancouver House Pavilion, which was situated in “LiveCity Vancouver,” one of the busiest entertainment sites of the Games. In this central venue, the public had a chance to see and learn about the changes the city was making to become more sustainable and the green economic strategy it was aggressively pursuing. In addition, it provided a showcase for Vancouver business leaders that were active in the city’s fast growing green economy as well as housing the private business development Games-hosting MVC Program.

MVC marketed the host region’s natural beauty, high living standards, efficient transportation infrastructure, business incentives, green expertise, and other competitive advantages in their strategy to boost business activity in five targeted industry sectors that were seen as future leaders of the economic engine of Greater Vancouver. These sectors included (1) green technology/aviation, (2) green technology/buildings, (3) business services, (4) biotech and life sciences, and (5) digital media/film. Three distinct phases of the MVC program were crafted and implemented in this aim:

1. Phase I (May 2009–February 2010): involved the financing, recruitment, and screening of partners, foreign companies, and host companies, and developing the Games-time hosting program (Robertson, 2010)⁵
2. Phase II (February 10–March 1, 2010): consisted of 20 days of business-to-business and Olympic activities during the Games (Levitz, 2010)⁶
3. Phase III (March 2010–December 2011): involved business guest and host company follow-up, deal generation, and a post-Games program measurement and assessment⁷

The results of the 2010 Olympic Games “Vancouver Green Capital” business development program to date

The initial focus of the “Vancouver Green Capital” program was for Vancouver City Hall to take a leadership role in mobilizing the efforts of the local community in becoming the “Greenest City on Earth.” In the time period since the 2010 Olympic Games, the City has consistently enhanced its green practices in both its own operations and within the parameters of its municipal government jurisdiction. Some of the notable achievements are included in the sections that follow.

Greener building standards

The initiatives that are related to the built environment are widely seen as one of the most impactful aspects of the city's 2010 Games-related sustainability planning. Much of the city's progress has occurred through enhancing building codes and other development regulations, introducing innovative financing programs, and the advent of new neighborhood-scale energy systems. In recognition of these efforts, in 2013, the World Green Building Council recognized the Vancouver as having the "Best Green Building Policy" of any jurisdiction in the world (City of Vancouver, 2014, p. 15).

Financial support tools

The Home Energy Loan Program (HELP) was launched in 2011 in partnership with the largest of the region's credit unions, VanCity. The HELP program was designed to assist Vancouver residents overcome common barriers to undertaking energy efficiency retrofits by connecting them to a support system of affordable financing coupled with senior government rebates. The HELP program provided a third-party energy assessment recommending energy- and cost-saving upgrades, and up to a \$10,000 loan, at 4.5 percent interest (Carbon War Room, 2013, p. 43).

The HELP program was a prime example of the policies and programs in the Global Green Capital Program of the Carbon War Room. These municipal programs were the subject of a major sustainability conference that was organized by the City of Vancouver and the Carbon War Room during the Games and which involved officials from leading cities around the world. However well intentioned, the HELP program was scrapped after a year due to low uptake (Carbon War Room, 2013).

Greener building codes

In July 2010, Vancouver City Council approved a policy requiring that all new building rezonings meet the LEED Gold building standard.⁸ The city also implemented the Higher Buildings Policy in 2011. This policy requires a 40 to 50 percent reduction in energy use in buildings, the costs of which are offset in part by the allowance of additional building height (City of Vancouver, 2012, p. 16).⁹

In 2013, Vancouver City Council approved a new bylaw requiring commercial buildings to be 13 percent more energy efficient and private homes to emit no more than 50 percent of the GHG emissions that are allowed under the provincial building code standards. This city building code also requires energy efficiency upgrades to existing buildings at the time of renovations in order to obtain a renovation permit, the first example of this kind building standard in Canada (City of Vancouver, 2014, p. 15). As of 2014, the city required buildings on rezoned land to be a further 22 percent more energy efficient (City of Vancouver, 2015b).

The pioneering athletes' village/Southeast False Creek NEU was created as an Olympic pilot project to determine if waste heat recovery systems that captured heat from city sewers made economic and environmental sense, by reducing demand for natural gas and electricity that would otherwise be needed to heat these buildings. The statistics have shown that the NEU at the Olympic Village reduced greenhouse gas emissions (GHG) in the neighborhood by 74 percent, while maintaining competitive utility (gas and electricity) rates (City of Vancouver, n.d.-b).

The apparent environmental and economic success of this pilot project has created a model for the city to show how other major developments might be able to use district energy systems to ensure that high-density residential and commercial developments reduce utility costs and

reduce GHG emissions. This precedent has created a push from other real estate developments to install their own privately run NEUs. For example, the River District on Marine Way in South Vancouver has installed a developer-owned neighborhood renewable energy system that has been operating since 2012, which provides heat and hot water to new building developments in the area (River District Vancouver, n.d.). A company has been selected to develop another heat and hot water NEU in the Northeast False Creek and Chinatown districts in Vancouver, and several other systems for other areas of the Vancouver are being evaluated or being implemented in prime areas of the central city including South Downtown, the West End, False Creek Flats, and the Cambie Corridor (Vancouver City Council, 2015).

The successful creation of new green jobs

The city's efforts to "green" the city had the mutually reinforcing intentional effect of developing green jobs in the region. The city includes the development of jobs in the local food production sector within this definition of "green jobs" both due to reduced transportation-related GHG emissions in the food supply chain, as well as the recognition that contributing to local food production jobs adds to social sustainability in the region.

Since the inception of the Vancouver Green Capital program, green and local food jobs in Vancouver have increased by 19 percent overall (from 16,700 to 20,000) (Veltkamp, 2014, p. 2). There has been a 21 percent increase in local food jobs (including the growth of urban farms, farmers' markets, street food vendors, and craft breweries). A similar increase of 19 percent has occurred in green transportation related jobs. And finally, the changes in the city's green building standards and related policies have been a catalyst to increase green building design and construction jobs by 50 percent between 2010 and 2013 (City of Vancouver, 2014, p. 6).

Public transit

The Vancouver 2010 Olympic Games organizers were also successful in reducing carbon emissions at Games time through a robust campaign that promoted the use of public transport to sports venues as well as an emphasis on walking and cycling as the preferred means of transportation during the Games. An April 2012 report from Translink (the organization responsible for the public transportation network in Metro Vancouver), showed a 6.6 percent increase in the use of public transit travel in 2011, which continues the upward trend established during the 2010 Games (Translink, 2012). Ridership has continued to increase since that time to the point that more than half of the trips made in the city are done by this more sustainable, shared public transportation method.

Eighty percent of the 2020 targets set out in the 2009 *A Bright Green Future* report were achieved by 2015. The city therefore adjusted and has set new 50 new targets to be achieved by 2050 in its *Vancouver Renewable City* report (City of Vancouver, 2015c).

The 2010 Games-time hosting program aimed at green business development

The MVC program has provided a very robust return on investment. For the cost of only C\$1.63 million, over C\$60 million worth of contracts from foreign investors were concluded with local companies in green initiatives within the first eight weeks of the Games, exceeding the original 18-month target for the Program (Levitz, 2010).¹⁰ A report published by PricewaterhouseCoopers showed that the MVC program generated C\$194 million in DFI, including

C\$350 million in economic impact and benefits, and 3,000 new jobs in a dozen targeted sectors including clean technology and C\$179 million in overall GDP growth for the Host Region.¹¹

Several of the visiting business leaders who participated in the Games Hosting program credited the Games-related activities and the spirit in the city as being a major reason to invest in Vancouver rather than elsewhere. Other business investors noted that the 2010 Games created an atmosphere that was very conducive to doing business and that influenced them to conclude business deals with local companies that had already been in the works (Levitz, 2010).

In summary, the MVC business promotion Games hosting initiative is a good example of how the host community can leverage a sport mega-event to create longer-term economic development in targeted industrial sectors. By all measurable terms, the successful results of MVC program illustrates how the host community working in collaboration can achieve a strong return on a shared public investment. However, the partnership in between the participating municipalities effectively finished after the conclusion of the Games.

The lesson to be learned here by Games proponents is that without the compelling focus of the sport mega-event that helps to create a common agenda and timetable for synchronized efforts among regional communities, and without the leadership and cooperation provided by the Host Committee, the collaborative social capital among regional governments that is created by the Games project can quickly disappear after the closing ceremony has ended. This can be seen in the post-2010 Games period when regional municipalities retreated to their own more insular foci of concern, with their business development efforts refocusing locally and in a piecemeal fashion rather than a continued coordinated regional strategy approach (Metro Vancouver, 2015, p. 11).

Unlike many of its neighboring municipal government counterparts, the City of Vancouver has built on the momentum gained before and during the Games and has continued to carry the torch of the “Vancouver Green Capital” program through the City’s greening efforts and working in tandem with the Vancouver Economic Commission (VEC). In September 2010, the mayor led a trade and investment mission of the business leaders from the five focus areas of the MVC to the World Exp. 2010 in Shanghai and then to various major cities in China. On this business development mission, the group promoted the successes in urban best practices learned in the redevelopment of the areas for the 1986 World Expo in Vancouver, the district energy system concepts employed in the Olympic Village, and the use of wood products (of which British Columbia is a leading global producer and exporter) as a sustainable building material. The athletes’ village was an important platform to demonstrate real-time monitoring of energy use using a locally produced technology that will be a major focal point for longer-term business promotion of Vancouver as a potential exporter of these goods and professional services.

The VEC is an independent economic development agency created by the city to strengthen its economic future by helping existing businesses and fostering new business. The VEC has been at the forefront of promoting the 2010 Games-related sustainability achievements to support the expansion of green business in the city. For example, the VEC supported 36 local green companies at the GLOBE 2014 Conference to pitch their innovative solutions to over 400 investors from around the world. The VEC was involved in the organization of eight other green economy events in the year of 2013 alone, all of which helped to build Vancouver’s reputation as a mecca for green business enterprises.¹² VEC has also developed a “Green Jobs Roadmap” that identifies initiatives that generate new investment and increase the proportion of green activity leading to new jobs in Vancouver’s green economy to help achieve this goal.

The Shanghai Exp. 2010 and the other cities that the group visited provided a valuable platform for Vancouver to promote its new green business brand by demonstrating how it has established itself as an emerging center with leading green industry achievements in clean energy,

transportation mobility, and green building projects (Kaye, 2010). In tandem with the domestic efforts of the VEC, the city is investing heavily in the promotion of these industries to continue the momentum that was kick-started with the 2010 Games project.

The 2010 Games tourism promotion strategy

A fulsome treatment of the strategies, cooperative systems, common brand development, and tourism promotion programs and Games-time and post-Games tourism impacts of the 2010 Olympic Winter Games tourism is worthy of its own book chapter. But we would be remiss if we did not mention two areas of critical intersection between the Vancouver Green Capital business development strategy and the 2010 Games-related tourism promotion efforts:

- 1 The importance of the 2010 Olympic Games-related hospitality infrastructure, including the rapid transit line from Vancouver International Airport to downtown Vancouver and the environmentally cutting-edge Vancouver Convention Centre West
- 2 The value of the 2010 Games tourism consortium of various municipal, regional, and national governments tourism development agencies that was originally established to coordinate tourism promotion efforts for the 2010 Games, but continues to operate as a collaborative mechanism to pursue major tourism targets.

As mentioned earlier, the International Broadcast Centre for the 2010 Games was temporarily located during the Games in one of the key strategic investments that was undertaken by the host community as part of the Games project. After the Games concluded, this building became the Vancouver Trade and Convention Centre West and has since provided much-needed capacity to host large meetings and conventions in the city.

The post-Games component of the 2010 Games Tourism Strategy involved a process of capitalizing on the investments in brand building and good working relationships that were established with the media prior to and during the 2010 Games in order to accomplish what those in the tourism business refer to as “closing the sale.” This means turning peoples’ increased interest and awareness of Vancouver and the rest of Canada (through the global media attention that is attached to hosting the 2010 Games) into confirmed post-Games visits to the host city as well as to the entire country.

Another key element of the 2010 Games-related tourism promotion efforts (including Games-time hosting) was to target meetings, conventions, and incentive travel (MC&IT). This is a much sought after, high-yield segment of the tourism industry, considering that MC&IT travelers spend an estimated 2.5 times as much as regular leisure tourists, generating far greater economic impact in related services such as hotels, convention centers, restaurants, bars, night-clubs, taxis, limos, and other professional services. MC&IT visitors are also critically important to other Canadian sectors because of the opportunity to encourage business, conference, and incentive travelers to return as leisure vacationers or to potentially invest in other areas of the Canadian economy.

The prototypical major annual conference that Vancouver tourism leaders were hoping to attract was the TED Conference. The TED Conference is an annual four-day conference that had been held in Long Beach, California, for decades. TED stands for “Technology, Entertainment and Design,” and it has been described as the most powerful and influential ideas transfer conference in the world. Under the moniker “Ideas Worth Spreading,” the 18-minute TED Conference presentations from many of the world’s most fascinating thinkers and doers are released online as TED Talks and have been collectively viewed more than 1 billion times.

Why would the TED Conference relocate to Vancouver? Citing an interest to get more global in its reach, the TED Conference was looking for a more international home in the hope to gain better positioning as a global brand (Gierasimczuk, 2013). Chris Anderson, curator of TED, explained why Vancouver became the city of choice for his organization as follows:

In Vancouver we found a special combination of things we didn't find anywhere else and it got us really excited. It is an amazing city which is reflective of the values people hold. There is a feeling of looking forward, a commitment to excellence, of innovation and sustainability. Just a bustling energy, which is thrilling.

(Lee, 2013)

The TED Conference's new home thus became the Vancouver Convention Centre. The venue, with the largest green roof in North America, and which is operated under the highest standards of environmental sustainability, was ideal to Anderson in that he found it inspiring and that "you feel connected to nature there" (Bula, 2013). Moreover, the Vancouver Convention Centre is conveniently central to the first-rate hotels and the vibrant civic activities in Vancouver's city center. The TED Conference organizers saw Vancouver as a city whose spirit matched that of TED.

Why is the TED Conference attractive to Vancouver? From the perspective of the City of Vancouver, TED was a fit for what Vancouver is looking for in developing its global presence. As noted earlier, the "business brand" that Vancouver promoted through the 2010 Games via its hosting program and post-Games business development efforts was "Vancouver Green Capital," with the goal of becoming the greenest city in the world by 2020. With the TED Conference having begun coming to Vancouver in 2014, city leaders are hopeful that this, coupled with many other business development initiatives, will help build increased momentum in this direction.

Mayor Robertson spoke of the benefits of TED in the following terms:

The world renowned TED Conference moving to Vancouver is great news for our tourism industry and validation of our work to make our city a world leader in sustainability and innovation . . . Having the TED organizers choose Vancouver as their new home is a big vote of confidence in the creative entrepreneurs, social innovators and community leaders who make Vancouver a leading-edge city.

(City of Vancouver, 2013)

The relocation of the TED Conference to Vancouver in 2014 was a clear affirmation of the economic benefits of having an Olympic Games tourism promotion strategy that looks well beyond the year of the Games to achieve an optimal return on investment of Olympic Games-related tourism promotion efforts. Tourism promotion agencies that had formed a collaborative business network before the 2010 Games took advantage of the international media relationships, video assets, and partnering know-how that had been developed in the context of the 2010 Games to create a compelling case that TED should choose Vancouver/Whistler to fulfill TED's aim to achieve a more international reach and to align itself with the host city and country.

The push to promote Vancouver as a leading international meetings destination has also been successful. In May 2016, the International Congress and Convention Association (ICCA) ranked Vancouver as the top city in North America for international meetings, and the Watkins Research Group's prestigious Meeting and Convention Planners Survey rated the Vancouver Convention Centre the number-one venue in North America for Superior Convention Facilities.¹⁵

Summary and conclusion

The 2010 Olympic Games-related programs that have been launched under the business brand of “Vancouver, Green Capital” are an important example of how an Olympic host city working with other regional municipalities can translate some of the more visible sustainability elements of the event into a focused post-Games green technology industrial strategy. The 2010 Olympic Games created the rationale for developing innovative cutting-edge green venues and infrastructure, as well as attracting the requisite private and public provincial and federal funding to build it. These projects created and/or enhanced local skilled labor in both the design and build phases. This enhanced human capital and (from an environmental perspective) cutting-edge built capital were effectively leveraged through a collaborative effort from the local governments and the business community to attract and host targeted businesses during the Games where the host community promoted Greater Vancouver as an ideal place to live, work, and invest.

The hosting strategy conveniently dovetailed the city’s 10-year plan to become the “Greenest City on Earth” by 2020. The city’s efforts to become more sustainable reinforced its local green economy and created credibility for foreign investors. By combining the efforts of local governments, targeted business deals were made throughout the region. The city took advantage of the unique media spotlight that a mega-sport event such as the Olympic Games provides to showcase its sustainability efforts and aspirations throughout and following the Games. The result has been that the Vancouver’s brand, which is intimately tied to its environment, sustainability, and livability, has been greatly enhanced, as evidenced by a valuation of \$31 billion (Baum, 2015, p. 5). This has created a strong value proposition for the types of industry the city is seeking to attract, leading to increased foreign investment in the green economy as well as high-value tourism that is taking advantage of the venues created through the Olympic project.

Vancouver’s 2010 Games economic development strategy focused on increasingly geographically mobile entrepreneurs, investors, and talent that make up the green technology/aviation, green technology/buildings, business services, biotech and life sciences, and digital media/film sectors. The results to date have been quite affirming, as these sectors have experienced robust growth as Vancouver has outpaced other major cities in Canada in economic development, real estate prices, and tourism activity. For example, the film and television production sector has grown in production expenditures in BC (almost all of which is located in Greater Vancouver) from approximately \$1.02 billion in 2010 to \$2.02 billion in 2015 (British Columbia Film Commission, 2012; Creative BC, 2015).

But this kind of vibrant economic growth, coupled with Vancouver’s growing global profile as a livable city, has helped to create an intense demand for investment in real estate in the Vancouver region. This demand has exceeded supply, which has caused rampant price increases, in particular for residential property in the region to the point where the costs of both owning and renting property in Vancouver no longer reflect local incomes. This, in turn, is beginning to create concerns within the booming green jobs sectors that the much-needed, globally sought after creative talent in these sectors can no longer afford to live in the city. Civic, provincial, and federal governments are now looking at variety of regulatory and taxation tools to address this housing affordability challenge so that the currently successful 2010 Games green economic development strategy is not stunted by an overheated regional real estate market.

In summary, at each critical phase of the planning and execution of the Vancouver 2010 Olympic Winter Games, governments, local industry, and the organizing committee developed and executed a coherent and focused strategy of what they wanted to achieve in hosting the Games.

The 2010 Games proponents wanted to use the global media attention to the city that the Games would offer in order to showcase Vancouver as a leader in green building technology in the

design, construction, and operation of the competition venues, as well as the related infrastructure of the Games. But the 2010 Games project was designed from the outset not just to focus on building and hosting the Games, but to leverage the Games for sustainable smart growth. The 2010 Games was conceived as a catalyst to engage the creativity and resources of the host community in this once-in-a-lifetime opportunity to prove to the world that Vancouver could host the “greatest show on Earth” in a sustainable way. As the bid book proclaimed, this was Vancouver’s “time to shine.”

After seven years, it is fair to say that Vancouver has made major strides to achieve the Greenest City Action Plan’s aim of positioning Vancouver as the “Greenest City on Earth” by 2020. The fact that Vancouver gave itself 10 years from 2010 Games time to the 2020 benchmark date has afforded the city ample time to provide the necessary leadership and learning experience to engage the creativity and resources of the community in this attempt to be a world-leading, gold-medalist city in urban sustainable development.

Notes

- 1 Notably, for several of these environmental objectives, the Bid Corporation specifically referenced the significant achievements of Vancouver on environmental issues and the opportunity for the City to highlight excellence in design, planning and technology. In outlining its objectives under its Environmental Key Point Action Plan, the Bid Book proposed that the Vancouver Games would include: (1) “new buildings and infrastructure. . . (that) will be a showcase of the best in green building design and construction techniques. . .”; (2) “leading-edge solid waste management plans that provide the platform to pursue a zero solid waste management strategy during the Games”. . .; (3) “. . . Our goal is to move towards a zero net emissions Games that is climate neutral.”
- 2 VANOC, through its “BuySmart” program that involved both a capacity building among suppliers and community development approach, created the opportunity for inner-city, social enterprise and Aboriginal businesses to participate in the Olympic Games supply chain. This was significant in involving and empowering cross-sections of society that typically do not experience the economic benefits of sporting mega-events.
- 3 The City of Vancouver has taken significant steps to promote safe commuter cycling in the City by building dedicated bicycle lanes separated from vehicle traffic on several high traffic corridors leading into the city center.
- 4 Vancouver, Richmond, Surrey, North Vancouver (City and District), New Westminster, Coquitlam, Maple Ridge, and Port Moody.
- 5 Phase I: MVC “strategically targeted international businesses which were considering investing or moving [to Vancouver]”. There were 424 foreign companies that were researched and exhaustively screened, and of these 150 were invited to attend the Games. The MVC Program was successful in attracting 97 executives of 71 companies to the Vancouver Olympic Games. Executives were chosen because they had previously expressed a genuine interest in the host region. One hundred host companies and 50 educational institutions and industry associations from the Metro Vancouver Region were recruited to attend the business-to-business meetings and events during the Olympic Games.
- 6 Phase II: The MVC Program consisted of five industry specific waves of approximately 20 executives in four-day visit cycles during the Games. Each of the five business-sector waves participated, on average, in 15 scheduled activities, including business briefings, business-to-business sessions, business showcases, one-on-one business sessions, business receptions, and ticketed and non-ticketed Olympic events. The MVC Program was designed to strategically connect the guests with prominent local business leaders, politicians, and relevant economic development agencies in order to get a firsthand look at the local business environment and to enjoy the unique Olympic Games experience as valued guests of MVC.
- 7 Phase III: The third phase of the MVC 2010 Business Program consisted of guest company follow-up communications with companies based on Games-time expressions of interest in new business activity, a post-Games guest survey, formal debriefing of local participants including sharing of lessons learned, ongoing MVC outreach to senior governments, industry associations and companies who participated in the program, and objective measurement of outcomes. All post-Games activities were organized to contribute to a planned recalibration of the MVC business plan based on ongoing business development experience in the MVC program and its relative success in brokering business agreements.

- 8 “Five to seven per cent of the increased costs are covered through a reduction in re-zoning charges to the developer.”
- 9 “Current development applicants are leading the way and including features such as renewable energy systems, living walls, onsite water and wastewater treatment, rainwater collection and solar energy collectors.”
- 10 With the exception of the lucrative \$27 million partnership formed between Abbotsford-based Cascade Aerospace and Lockheed Martin, the promised investments are all in the advanced energy tech area. For example, the North Vancouver-based Hydrogen Technology and Energy Corp has agreed to a partnership with Air Liquide of France to build a \$15 million plant in North Vancouver that will take by-product hydrogen and turn it into fuel to service fuel-cell buses in Whistler as well as local industrial needs and fuel-cell initiatives. Other new business partnerships emanating from the MVC program in the Host Region involve notable international green companies such as KC Cottrell, as well as companies from the UK, Spain, the Netherlands, Germany, and the United States.
- 11 The business activities at the center of these deals included carbon capture technology licensing, carbon recycling technology development, smart grid, and energy generation/storage.
- 12 Including, for example, the Canada Green Building Council’s National Conference, Eco Fashion Week, and UBC’s Partnerships for Canada’s Clean Economy 2014 conference.
- 13 Watkins Research Group’s Meeting and Convention Planners Survey is considered the most comprehensive and authoritative survey of the convention and meetings industry, and its annual rankings are based on a global evaluation of meeting and convention organizers.

References

- Baum, E. (2015). *Written evidence of Edgar Baum, Brand Finance (Canada) Inc. City of Vancouver*. Retrieved from <http://vancouver.ca/images/web/pipeline/Edgar-Baum-Vancouver-brand-valuation.pdf>
- British Columbia Film Commission. (2012). *British Columbia Film Commission production statistics 2010*. Retrieved from www.creativebc.com/database/files/library/2010_Stats_Package.pdf
- Bula, F. (2013, February 4). TED Talks choose Vancouver as host. *The Globe and Mail*. Retrieved from www.theglobeandmail.com/news/british-columbia/ted-talks-choose-vancouver-as-host/article8167165/
- Carbon War Room. (2013). *How to create climate wealth through efficient buildings*. Retrieved from http://carbonwarroom.com/sites/default/files/reports/CWR13_Energy_Efficiency_Report_Raising_the_Roof_-_How_to_Create_Climate_Wealth_through_Efficient_Buildings.pdf
- City of Vancouver. (2009a). *Greenest City: Quick start recommendations*. Retrieved from <http://vancouver.ca/files/cov/greenestcity-quickstart.pdf>
- City of Vancouver. (2009b). *Vancouver 2020: A bright green future: An action plan for becoming the world’s greenest city by 2020*. Retrieved from <http://vancouver.ca/files/cov/bright-green-future.pdf>
- City of Vancouver. (2012). *Greenest City 2020 action plan: 2011–2012 implementation update*. Retrieved from <http://vancouver.ca/files/cov/greenest-city-implementation-update-20120116.pdf>
- City of Vancouver. (2013, February 4). *Statement from Mayor Robertson on the TED Conference coming to Vancouver in 2014* [Press release]. Retrieved from <http://vancouver.ca/news-calendar/statement-from-mayor-robertson-on-ted-conference-coming-to-vancouver-in-2014.aspx>
- City of Vancouver. (2014). *Greenest City 2020 action plan: 2013–2014 implementation update*. Retrieved from <http://vancouver.ca/files/cov/greenest-city-2020-action-plan-2013-2014-implementation-update.pdf>
- City of Vancouver. (2015a). *Greenest City 2020 action plan: 2014–2015 implementation update*. Retrieved from <http://vancouver.ca/files/cov/greenest-city-action-plan-implementation-update-2014-2015.pdf>
- City of Vancouver. (2015b). *Greenest City 2020 action plan: Part 2*. Retrieved from <http://vancouver.ca/files/cov/greenest-city-2020-action-plan-2015-2020.pdf>
- City of Vancouver. (2015c). *Renewable city strategy: 2015–2050*. Retrieved from <http://vancouver.ca/files/cov/renewable-city-strategy-booklet-2015.pdf>
- City of Vancouver. (n.d.-a). *Olympic village*. Retrieved from <http://vancouver.ca/home-property-development/olympic-village.aspx>
- City of Vancouver. (n.d.-b). *Southeast false creek neighbourhood energy utility*. Retrieved from <http://vancouver.ca/home-property-development/southeast-false-creek-neighbourhood-energy-utility.aspx>

- Creative BC. (2015). *2014/2015 tax credit certification activity*. Retrieved from www.creativebc.com/data-base/files/library/Tax_Credit_Certifications_2012_2015___Final.pdf
- Gierasimczuk, T. (2013, February 4). The TED Conference relocates to Vancouver and Whistler. *BC Business*. Retrieved from www.bcbusiness.ca/marketing-media/ted-conference-relocates-to-vancouver-and-whistler
- Kaye, A. L. (2010, May 27). Vancouver is the world's green capital and at Vancouver Pavilion at Shanghai Exp. 2010, the world found out. *Vancouver Observer*. Retrieved from www.vancouverobserver.com/life/travel/2010/05/26/vancouver-worlds-green-capital-and-vancouver-pavilion-shanghai-expo-2010
- Lee, J. (2013, February 5). Blockbuster TED Conference moving to Vancouver next year. *The Vancouver Sun*. Retrieved from www.vancouversun.com/story.html?id=7915686
- Levitz, S. (2010, April 28). Olympics generated \$60-million worth of deals for Vancouver area. *The Globe and Mail*. Retrieved from www.theglobeandmail.com/news/national/british-columbia/olympics-generated-60-million-worth-of-deals-for-vancouver-area/article1550425/?cmpid=rss1
- Luba, F. (2010, April 28). Vancouver mayor says \$1.5-million Olympic boost pays off in jobs, investment. *The Province*.
- Mayor of Vancouver. (2010, February 16). *Olympic Village greenest neighbourhood in the world* [Press release]. Retrieved from www.mayorofvancouver.ca/olympic-village-greenest-neighbourhood-in-the-world
- Metro Vancouver. (2015). *Green paper: Framework for a regional prosperity initiative in Metro Vancouver*. Retrieved from www.metrovancouver.org/boards/GVRD/RD_Dec-11-2015_RCL-2.pdf
- PricewaterhouseCoopers. (2009). *Report 3: Impact of the 2010 Olympic and Paralympic Winter Games on British Columbia and Canada: 2003–2008*. Retrieved from www.fin.gov.bc.ca/reports/pwc-olympic-report3.pdf
- River District Vancouver. (n.d.). *District energy utility*. Retrieved from www.riverdistrict.ca/awards/district-energy-utility
- Robertson, G. (2010, May 15). Vancouver is back on track and fulfilling its potential. *The Vancouver Sun*. Retrieved from www.pressreader.com/canada/the-vancouver-sun/20100515/288548788805415
- Translink. (2012). *TransLinks 2011 year end financial and performance report*. Retrieved from www.translink.ca/en/About-Us/Media/2012/April/TransLinks-2011-Year-End-Financial-and-Performance-Report.aspx
- VANOC. (2010). *Sustainability report 2009–10*. Vancouver, BC: Vancouver Organizing Committee for the 2010 Olympic and Paralympic Winter Games. Vancouver City Council. (2015). *Vancouver City council: Administrative report: Neighbourhood energy by-law for Northeast False Creek and Chinatown*. Retrieved from <http://council.vancouver.ca/20150428/documents/a2.pdf>
- Vancouver Convention Centre. (n.d.-a). *Sustainability fact sheet*. Retrieved from https://vancouverconvention.cdn.prismic.io/vancouverconvention%2Fbec3520d-99a6-414e-afa3-78996dfda8a4_vancouver+convention+centre_sustainability+fact+sheet_final.pdf
- Vancouver Convention Centre. (n.d.-b). *Sustainable event guidelines*. Retrieved from https://vancouverconvention.cdn.prismic.io/vancouverconvention%2F75695082-b74e-43be-9c00-7dd068b30da2_vancouver+conv+centre+sustainable+event+guidelines+final.pdf
- VanWynsberghe, R., Derom, I., & Maurer, E. (2012). Social leveraging of the 2010 Olympic Games: 'Sustainability' in a City of Vancouver initiative. *Journal of Policy Research in Tourism, Leisure and Events*, 4, 185–205.
- Veltkamp, J. (2014). Green and local food jobs in the City of Vancouver. *Vancouver Economic Commission*. Retrieved from www.vancouvereconomic.com/wp-content/uploads/2015/04/VEC_GreenJobsReport_2014_web.pdf

SECTION 3

Facilities and operations



Taylor & Francis

Taylor & Francis Group
<http://taylorandfrancis.com>

ASSESSING THE ENVIRONMENTAL IMPACT OF ECONOMIC ACTIVITY SURROUNDING MAJOR SPORT EVENTS

Andrea Collins and Annette Roberts

Published studies that have assessed the impacts of major sport events have tended to focus on their economic impacts or wider related economic development effects. As Preuss (2007) explains, “Most often the economic impact is measured because it is tangible and needed for political justification of investing scarce public resources in an event” (p. 212). Indeed, the potential contribution to economic growth is often the dominant reason why an increasing number of public sector organizations are developing event or sport-based development strategies and bidding to host major events (Gratton, Shibli, & Coleman, 2005). In addition to these economic benefits, more recently, major sport events are being used to leverage wider social and environmental benefits. For example, London’s hosting of the 2007 Tour de France Le Grand Départ was used not only as an opportunity to “showcase” the city as a suitable location for staging world-class sporting events and generate additional visitor expenditure, but also to promote cycling in London.

During the last 10 to 15 years, issues relating to the environmental impact of major sport events have gained increased attention among academics, policy makers, and event organizers. This trend is similar to what has been happening across tourism and business activities more generally with a drive for corporations, event organizers, and policy makers to be accountable for their environmental as well as economic impacts. However, despite the rhetoric surrounding the need to address sustainable development and climate change (see Chapter 9), there is a paucity of studies that have attempted to provide a comprehensive assessment of the “costs” and broader impacts of major sport events.

Major sport events are often attended by large numbers of visitors, who as part of their activities and spending will inevitably consume resources. This consumption, often considered in terms of expenditure and economic impact, will also have an environmental impact. Assessing the environmental impact of visitor economic activity is critical to developing a more comprehensive understanding of the impacts of major sport events. It would also provide government organizations with a more balanced and quantifiable evidence base from which to assess major events and enable those responsible for event management to demonstrate the sustainability of their events and monitor progress over time.

This chapter assesses and compares the economic and environmental impacts of three major sport events held in the UK. Their economic impacts are measured using spending survey information and an input-output modeling framework, and their environmental impacts are assessed using the ecological footprint (EF) and environmental input-output analysis (ENVIO) approaches. The chapter shows how this combination of approaches can enhance our understanding of the environmental impacts of different sport events and factors influencing the scale of their impacts. As events differ in terms of their geographical location, scale, visitor numbers, and consumption activities, this can assist policy makers and event organizers in understanding differences in impact across events. More specifically, this chapter will address the following research questions:

- 1 What is the economic impact of the selected major sport events?
- 2 What is the environmental impact of visitors attending these events?
- 3 Which event has the largest environmental impact? And what factors are influencing the scale of its environmental impact?
- 4 Which visitor activities generate the largest environmental impact?

The following section provides a short review of previous studies that have assessed the economic impacts of major sport events and discusses issues surrounding the assessment of event environmental impacts. The chapter then describes the methods used to assess the economic and environmental impacts of the selected events and their key strengths. Background information on the three events is then provided with an explanation of the data collection process. Analysis of the results is then presented, followed by conclusions and suggestions for further research.

Economic impacts of major sport events

The economic impact of major sport events and wider economic development effects, such as promoting tourism and business investment, urban development, and “showcasing” due to media coverage, have been the foci of a number of academic studies (see for example, Baade & Matheson, 2004; Dwyer, Forsyth, & Spurr, 2006; Gratton, Shibli, & Coleman, 2006; Hotchkiss, Moore, & Zoobay, 2003; Preuss, 2004; Shibli & Gratton, 2001; Solberg & Preuss, 2007). These studies have assessed the economic impacts of events using a number of different methodological approaches, ranging from simple addition of estimated visitor expenditure to careful consideration of net additional spending through to more complex modeling techniques including cost-benefit analysis (CBA), input-output analysis, and the computable general equilibrium (CGE) approach.

In the academic literature the claimed economic benefits of major sport events have been widely criticized. Key criticisms have related to the objectivity and methodologies used in their assessment (see Crompton, 1995, 2006). Studies are often undertaken or commissioned *ex ante* by organizations with an invested interest in the event taking place, and so there is a risk that effects may be inflated to gain the necessary financial and public support to stage the event (see for example, Matheson & Baade, 2006). Methodological criticisms have related to the period for which the effects are assessed (i.e., short term rather than long term); failure to include indirect and induced economic effects of events; lack of consideration of spending on imported goods; whether spending is retained in the local economy; inclusion of spending by residents and organizations that would have occurred whether or not an event had taken place; and effects of “crowding out” or displacement of other business activities. For a discussion of some of the

methodological issues relating to the measurement of economic impacts, see Preuss, Könecke, and Schütte (2010).

Research commissioned by UK Sport examined the economic impact of 16 sport events held in the UK between 1996 and 2003 (see Coleman, 2004). This involved calculating the total additional expenditure within the host area and the event's public profile and media value associated with television coverage and place marketing. The study concluded that in 14 out of the 16 events reviewed, the additional expenditure was less than £4 million, suggesting a fairly minor economic impact from the selected events.

Environmental impacts of major sport events

The environmental impacts of major sport events can be wide ranging and include the consumption of renewable and non-renewable resources, road congestion, noise and light pollution, emission of greenhouse gases by consuming fuel and electricity, and waste generation. Over the last 10 to 15 years, there has been an increased interest among policy makers, event organizers, and academics to understand the environmental impacts of major sport events (see for example, Dolles & Soderman, 2010; London Organising Committee of the Olympic and Paralympic Games, 2012; Mallen, Stevens, Adams, & McRoberts, 2010; Ponsford, 2011). A range of methods have been used to assess the environmental impact of major sport events, including environmental impact assessment (EIA), life cycle analysis (LCA), and Olympic Games global impact (OGGI). Although these methods have enhanced understanding of the range and scale of environmental impacts that can result from staging major sport events, they do have their limitations. Studies using several indicators to assess environmental impacts have difficulties in identifying which activities have the greatest impact or where event organizers should prioritize actions to reduce any negative impacts (Collins, Jones, & Munday, 2009). The lack of a common methodology for assessing environmental impact also makes it difficult for policy makers and event managers to compare similar events over time or to compare impacts across different events. Biophysical assessment methods such as those used in EIA (e.g., air quality sampling; see Chapter 23) are unable to consider indirect impacts associated with resource use at events (e.g., energy use in supply chains). Furthermore, they cannot quantify impacts that occur beyond the physical boundary of an event (e.g., transport emissions generated by supporter travel). The International Olympic Committee's OGGI study, which is required by local organizing committees, involves significant expertise and resources. It includes 150 indicators that focus on three categories – economic, socio-cultural, and environmental – and although it may cover all aspects of sustainable development, this approach to assessing event impacts may not be appropriate or conceivable for smaller-scale events (Jones, 2008).

More recently, two alternative methods have received increased attention for assessing the environmental impacts of resource consumption: the EF and ENVIO. Both methods are useful for assessing the resource use and environmental impacts of event-led consumption and can consider the environmental impact of visitor travel beyond the geographical boundary of an event, a key limitation of EIA methods. This is an important consideration as several studies have shown that travel is responsible for a significant proportion of environmental impacts associated with tourism (e.g. Becken, Frampton, & Simmons, 2002; Gössling, 2002; Gössling, Hansson, Horstmeier, & Saggel, 2002). The EF and ENVIO approaches also use input-output frameworks, which are consistent with methods used to assess economic activity and impacts, and so can be considered complementary as they provide a more comprehensive assessment of environmental impact. Both methods are discussed in further detail next.

Ecological footprint (EF)

The EF provides a quantified measure of the global environmental pressures related to human resource use. It assesses the amount of bio-productive land needed to provide the resources used by a defined population and assimilate the wastes produced (i.e., CO₂ emissions) using existing technologies and resource management practices. The EF's unit of analysis is the *global hectare* (gha), which represents a hectare with a world-average biological productivity, and is usually expressed in gha per capita for a given population.

The EF is based on a strong sustainability position as it considers the ecological limits to resource consumption and economic growth. By comparing the area of bio-productive land required to support a certain level of consumption within the Earth's available biocapacity, the EF is a valuable approach for assessing whether or not consumption is ecologically sustainable (Gössling, Hansson, Horstmeier, & Saggel, 2002). In 2010, the Earth's available biocapacity was 1.7 gha per capita (World Wildlife Fund, 2014), whereas the EF was 2.7 gha per capita. Identifying the "gap" between demand for, and availability of, finite environmental resources and resource availability makes the EF valuable for assessing whether visitor consumption at major sport events is sustainable or not. The EF has, however, faced a number of methodological and policy-related criticisms (see Ayres, 2000; Ferng, 2002; Lenzen & Murray, 2001; McGregor, Swales, & Turner, 2004; Moffatt, 2000; van den Bergh & Verbruggen, 1999).

Despite these criticisms, the EF has become an increasingly popular indicator of environmental sustainability and has gained a great deal of attention among academics and policy makers (Collins & Flynn, 2015). Although it has primarily been used at the national government level, its application has been extended to assess the environmental impacts of tourism and leisure activities (e.g., Collins & Flynn, 2005; Gössling, Hansson, Horstmeier, & Saggel, 2002; Hunter, 2002; Hunter & Shaw, 2007; Patterson, Noccolucci, & Marchettini, 2008; Peeters & Schouten, 2006). These studies have usefully demonstrated the scale of tourism's environmental impact, in particular the significance of travel.

Environmental input-output analysis (ENVIO)

The ENVIO approach is used to provide an assessment of the environmental impact of economic activity, in this case which arises due to the events. This approach adds an extension to the Input-Output framework (which can be used to assess the economic impact of events; see in a later section) to incorporate environmental factors/outputs. These outputs could be greenhouse gases, waste, or any other environmental "output" that can be tied to economic activity, where data are available on the production of the environmental output (such as CO₂) by industry per unit of economic activity (such as per £1 million of industry output) (see Collins, Flynn, Munday, & Roberts, 2007).

In the case examples used in this chapter, the ENVIO approach has been used to derive a measure of the carbon equivalent greenhouse gas emissions that arise as a consequence of the events. This is the amount of carbon that would result in the same warming effect of different greenhouse gasses, expressed in terms of mass (i.e., tons of carbon equivalent; t/Ce). In terms of events, the measure can enable the estimation of the total carbon emissions attributable to a specific activity (e.g., visitor travel to an event) and so provides a link between consumption, economic activity, greenhouse gas emissions, and climate change. The calculation of carbon emissions (which can be made using various methods) has become an increasingly popular measure of environmental impact, given the increased policy attention on the need to reduce climate change. An increasing number of private- and public-sector

organizations have measured their carbon emissions as part of their efforts to improve their energy efficiency, and this measure has been used to assess the environmental impact of several major events (e.g., Dolf & Teehan, 2015; Jones, 2008; London Organising Committee of the Olympic and Paralympic Games, 2012). The ENVIO approach enables the estimation to be extended beyond the calculation of direct emissions – linked with activities and outputs which are necessary to satisfy consumption – to also include indirect and induced-income (multiplier) emissions arising along supply chains. The advantage of the ENVIO approach is that it enables a more complete estimation of impacts, as an activity or industry output may be linked with relatively low greenhouse gas emissions directly, but its supply chain purchases may indirectly embody much higher levels of emissions. In addition, the calculation of economic and environmental impacts can be made within a consistent (single, but extended) framework.

Selected major sport events

The three major sport events considered in this chapter are the FA Cup Final (2004), Rugby 6 Nations fixture (2006), and Tour de France Le Grand Départ (2007). They are predominantly spectator driven and were selected based on their geographical location, the nature of the sporting event, their classification as major events (i.e., visitor numbers exceeding 10,000), their different durations, and the fact that similar methodologies had been used to calculate their environmental and economic impacts.

FA Cup Final (2004)

The Football Association Challenge Cup, also known as the FA Cup, is an annual knockout competition for football clubs in the UK and one of the greatest single matches in world club football. Cardiff (the capital of Wales) hosted five finals at the Millennium Stadium between 2001 and 2006 while Wembley Stadium in London was being rebuilt. In 2004, an estimated 73,000 supporters attended the final between Manchester United FC and Millwall FC (see Collins, Flynn, Munday, & Roberts, 2007).

Rugby 6 Nations fixture (2006)

The Rugby 6 Nations (R6N) is an annual rugby union competition involving six European country teams: England, France, Ireland, Italy, Scotland, and Wales. Each year, a total of 15 fixtures are hosted in the six competing countries. In 2006, Wales hosted three fixtures (against Scotland, France, and Italy) at the Millennium Stadium in Cardiff. The Wales versus Scotland fixture was attended by an estimated 85,499 supporters, of which 87 percent were ticket holders (see Collins & Roberts, 2008). The remaining 13 percent watched the match on large television screens in city center venues.

Tour de France Le Grande Départ (2007)

The Tour de France (TdF) is an elite men's cycling competition with 21 stages of racing (including a prologue) and covers some 3,600 kilometers, mostly in France. In 2007, Le Grand Départ of the Tour was hosted in London and Kent (southeast England). An estimated 1.9 million visitors attended the event (see Collins, Munday, & Roberts, 2012 for details on how the attendance figure was calculated).

Methodologies and data

Economic impact

The economic impact methodology is discussed only briefly here, as full coverage of the approach and related issues is beyond the scope of this chapter (for a more detailed discussion see Collins, Flynn, Munday, & Roberts, 2007 and Collins, Munday, & Roberts, 2012). The direct economic impact of the three events was undertaken using primary data generated from surveys with event spectators (see later). The survey data were analyzed and adjusted (for example, to discount some of the expenditure due to spectator spending on items – goods and services – that were imported into the study area, which would not therefore generate economic impact within the study boundary) and scaled up appropriately to represent the relevant population. Once a direct estimate of spending (by item/category) linked to the event had been achieved, these data were incorporated within an Input-Output framework to assess the “multiplier” (supply chain and induced-income) effects that could be connected with the direct spending. This approach to analyzing economic impacts has been widely used within policy and is considered to be a moderately straightforward method for assessing indirect economic impacts of economic activity (Jones, 2008). For the FA Cup Final and R6N, Input-Output tables for the Cardiff economy were used. In the case of the TdF, UK Input-Output tables were used. A detailed description of the Input-Output methodology and its strengths and limitations can be found in Miller and Blair (2009).

Environmental impact: EF and ENVIO

The EF and ENVIO were used to estimate the environmental impact of the three events. The EF analysis was undertaken using the Resource and Energy Analysis Programme (REAP), a footprint software analysis program developed by Stockholm Environment Institute at the University of York (see Dawkins, Roelich, & Owen, 2010). The methodology behind the EF calculations involved using National Footprint Accounts (NFAs) (provided by Global Footprint Network), which are then disaggregated using an Input-Output framework to establish a link with detailed national expenditure data. This enables NFAs to be allocated to detailed final consumption categories. The methodology takes into account the interrelationship between different economic sectors, and so the direct and indirect environmental impact of final consumption is accounted for and thus strengthens the accuracy of the EF calculations. The primary data collected through visitor surveys were used to calculate the total EF for each event. The additional EF was also calculated by subtracting what visitors would have consumed at home over the same period.

The environmental impact of the three events was also estimated by incorporating environmental data on carbon emissions within the relevant Input-Output framework and applying the ENVIO approach. As previously discussed, this analysis enables spending and economic impacts by industry to be directly linked to carbon emissions, and hence for the indirect and induced-income effects (environmental multipliers) to be estimated. One particular limitation of the approach as applied to the selected events relates to the boundary of impacts. The environmental impacts link to the spending data, which for the purposes of economic impact only consider spending within the defined areas (i.e., Cardiff and UK); hence, only environmental impacts linked with spending in those areas is estimated. For example, in the case of the FA Cup, only spending and emissions relating to local (i.e., Cardiff) transport services were estimated, as spending on transport to Cardiff would not have taken place within Cardiff. In some studies,

(e.g., the TdF) this issue was overcome by separately (outside of the ENVIO framework) estimating the emissions associated with travel to the reference areas.

Visitor survey

An important aspect of economic and environmental impact assessment is having access to accurate estimates of visitor expenditure and consumption patterns. As data on average tourist spending and consumption may not accurately represent visitors attending a major sporting event, the collection of primary data relating to each event was vital to ensure accurate calculations. For all three events, the term “visitor” included those whose primary reason for being at each location was to attend the event, although it is acknowledged that some may have been residents and would not usually be classified as visitors. The survey sample averages used for grossing-up purposes will have reflected lower spending and consumption by residents on certain items such as travel and accommodation, compared to other visitors. Therefore, the expenditure and consumption figures presented for each case event should be interpreted as indicative of the potential scale of impact.

For all three events, primary data on visitor expenditure and consumption were collected using face-to-face surveys. Surveys included questions on visitors’ home origin; mode of travel to the event; length of stay; overnight accommodation (i.e., expenditure, type, location, number of nights); food and drink consumption purchased (i.e., expenditure and type); and expenditure on a range of items, including tickets, travel, accommodation, leisure and tourist activities, food and drink, and merchandise, and retail shopping.

Results: economic and environmental impact

A summary of the economic and environmental impacts of the three events is shown in Table 15.1. The estimated total economic impact (the sum of the direct and multiplier effect of visitor spending) of the events is also shown, together with the economic impact per visitor, to provide some context for the environmental information. This information also then allows the environmental impact per £1m of economic impact to be estimated for each event (see later). The environmental impact results (EF and ENVIO) are expressed in terms of total impact, impact per day, and per visitor.

Table 15.1 The economic and environmental impact attributable to three major sporting events

<i>Event</i>	<i>FA Cup Final 2004</i>	<i>R6N 2006</i>	<i>TdF 2007</i>
No. of visitors	73,000	85,499	1,900,000
Duration	1 day	1 day	3 days
Economic impact ^a : (direct plus multiplier effects) £million in host economy	2.2 (Cardiff)	16.4 ^b (Cardiff)	79.75 (UK)
Economic impact per visitor, £	30.10	191.80	42.00
Total EF (gha)	3,051	3,578 ^b	57,990
At-home EF (gha)	388	919	26,250
Additional EF (gha)	2,663	2,659	31,739

(Continued)

Table 15.1 (Continued)

Event	FA Cup Final 2004	R6N 2006	TdF 2007
EF per day (gha)	3,051	2,193 ^c	19,330
EF per visitor (gha)	0.04179	0.04185	0.03052
EF (gha) per £1 million economic impact	1,386	152.3	727
ENVIO – total t/Ce ^a	560	1,700 ^b	64,290 ^d
t/Ce per day	560	1,042 ^c	21,430
t/Ce per visitor	0.008	0.020	0.034
t/Ce per £1 million economic impact	254.6	103.7	806.1

Note. gha = global hectare; t/Ce = tons of carbon equivalent.

- a Economic and environmental impact (t/Ce measure) arising in the study area was calculated. For FA Cup and R6N, this was the Cardiff sub-regional economy; for TdF, the national UK economy. The estimates then exclude the impacts associated with the entire journey of some visitors. The study areas are of varying sizes, and this will influence the scale of estimates provided for this measure of impact (see also note d).
- b Study collected data for a three-day period, as a number of visitors travelled to Cardiff and stayed overnight.
- c Estimated impact for the match day only.
- d Excludes international travel for more consistency with the other studies and estimates of t/Ce. The study separately estimated the carbon impact of travel, including international travel. When all travel is included, total carbon impact is estimated at 170,250.

The event with the largest “total” environmental impact by both measures was the TdF. The TdF differed from the other events as it was of longer duration (i.e., three days). It was also a free, non-ticketed event, and this may have influenced the number of visitors attending the event. Both the FA Cup Final and R6N were one-day events and held at the same venue; however, the R6N event attracted a larger number of visitors (85,499 compared to 73,000). The reason for this difference in visitor numbers is that rugby events at Cardiff’s Millennium Stadium also attract visitors without tickets who travel to the city to watch matches displayed on large screens at public venues. For this reason, and as a large proportion of rugby supporters often stay in Cardiff more than one day, the economic and environmental impacts were measured for a three-day period, whereas results were also calculated for match day only, for consistency with the FA Cup Final study. In terms of environmental impact, the R6N had a larger total EF (3,578 gha), some 17 percent greater than for the FA Cup Final (3,051 gha). The event also generated more carbon emissions (1,700 tons compared to 560 tons for the FA Cup Final).

It is interesting to also compare the economic impacts per event. As previously described in this chapter, carbon estimates are driven by spending at the events within the ENVIO framework. The economic impact per visitor for the R6N is considerably higher than for the FA Cup, as a number of visitors stayed in overnight accommodation and so were spending on more than one day in Cardiff. This higher spending (in total, and on match day only) therefore links through to higher carbon impacts. In the case of the TdF, there were significantly more visitors and associated impact. This larger impact is linked to visitor numbers, but also to the wider geographical scope of the study area (i.e., UK rather than Cardiff), meaning that more of the spending (hence economic and carbon impacts) are captured compared to the other two events. It is estimated that the economic impact of the TdF was almost £80 million of output, or around £40 per visitor.

To understand the relationship between the total environmental impact of an event and the number of visitors generating it, the EF and ENVIO results are considered alongside the supporter attendance at each event. The results suggest that there is a correlation between the number of visitors attending an event and its total EF and carbon impacts. From this it can be concluded that if policy makers and event managers are concerned about the scale of environmental impact generated by events, the number of visitors will be an important driving factor.

Environmental impact per day, per visitor, and per £1 million of economic impact

Although the total EF and ENVIO figures for an event are important in terms of quantifying environmental impacts, they have limitations as the number of visitors and event durations will vary and can influence the scale of an event's impact. A more consistent comparison of environmental impact across events can be made by considering the EF and carbon emissions per day.

As shown in Table 15.1, the TdF has the largest total environmental impact and impact per day, whereas the FA Cup and R6N are significantly smaller. However, on a per visitor basis, those attending the TdF had the lowest EF (0.031 gha) but largest carbon emissions (0.034 tons). Visitors attending the FA Cup and R6N had the same EF (0.042 gha per visitor). There is much more variation in the per visitor results between events using the ENVIO method. For example, the R6N result is twice that of the FA Cup, and the TdF carbon impact is still higher. These results are partly a consequence of the methodological framework used, and are connected to the economic impact figures also presented in Table 15.1. The factors contributing to these results therefore differ between events and methods.

As previously discussed, a key reason behind the demand and justification for hosting major events is due to anticipated economic benefits and returns for investment by event organizers and public-sector organizations. Considering the total economic impact of visitor spending, overall the tour had the greatest total economic impact at almost £80 million. However, if the environmental "cost" of each event is compared with its economic benefits, the FA Cup had the largest environmental cost as measured by an EF of 1,386 gha for every £1 million of economic impact in Cardiff. The R6N had the lowest environmental "cost" using this measure, with an EF of 152 gha for every £1 million of economic impact.

When comparing the environmental and economic impacts using the t/Ce measure, there is a different ordering of impact, with the TdF showing as having the highest environmental impact in relation to its economic impact. This event is more comparable in terms of the two environmental measures used in this chapter, as the t/Ce measure here is for the UK economy, and also captures international travel, with the economic impact also including more of the spending within the geographical boundary. For the FA Cup and the R6N, particular care should be taken in the use of EF per £1 million of economic impact measure, as the EF is a global measure, whereas the economic impact is just at the local economy level.

Factors influencing scale of environmental impact

To identify factors influencing the scale of an event's environmental impact, the results are disaggregated into component parts (see Table 15.2). Focusing on the EF results, for two of the three events, the largest environmental impact was attributable to visitor travel (ranging from 55 percent to 75 percent). The level of analysis provided by the EF and ENVIO calculations means that specific factors influencing these results can be identified. In the case of the TdF, a larger proportion of visitors (9 percent) had traveled from outside the UK. The majority of these

Table 15.2 Breakdown of EF and ENVIO results by consumption category

	<i>Event</i>	<i>FA Cup Final 2004</i>	<i>R6N 2006</i>	<i>TdF 2007</i>
	<i>No. of visitors</i>	73,000	85,499	1,900,000
EF (gha)	Travel	1,670 (55%)	1,117 (31%)	43,719 (75%)
	Food & drink	1,381 (45%)	2,177 (61%)	3,903 (7%)
	Accommodation (energy use)	–	284 (8%)	10,368 (18%)
	Total	3,051	3,578	57,990
ENVIO – t/Ce	Travel related	67.2 (12%)	325 (19%)	144,120 (85%)
	Non travel related	492 (88%)	1,375 (81%)	26,130 (15%)
	Total	560.05	1,700	170,250

Note. gha = global hectare; t/Ce = tons of carbon equivalent.

Table 15.3 Summary of visitor travel and corresponding EF

<i>Event</i>	<i>FA Cup Final 2004</i>		<i>R6N 2006</i>		<i>TdF 2007</i>	
<i>Mode</i>	<i>% distance traveled</i>	<i>% EF</i>	<i>% distance traveled</i>	<i>% EF</i>	<i>% distance traveled</i>	<i>% EF</i>
Air	–	–	3	4	59	46
Car	47	68	60	73	12	11
Rail	34	20	18	9	20	25
Bus & Coach	17	10	16	9	5	12
Other ^a	2	2	3	5	4	6.3
Total	43.2 million pkm	1,669 gha	24.3 million pkm	1,117 gha	1.39 billion pkm	43 719 gha
Average per visitor	591	0.023	284	0.013	732	0.023

Note. pkm = passenger kilometers; gha = global hectare.

a Includes boat, cycling, ferry, minibus, motor cycle, motorhome, taxi, and walking.

visitors travelled to the UK by air, and their journeys accounted for 58.6 percent of the overall distances travelled by visitors (see Table 15.3). These two factors combined contributed to the scale of the TdF transport EF.

In the case of the R6N, visitor travel had a relatively small EF (31 percent). This was because a larger percentage of local and regional visitors attended the event. Fifty-two percent of visitors attending this event originated from Wales (8.4 percent from Cardiff), and only 3 percent came from outside the UK (2,565 visitors). As shown in Table 15.3, R6N visitors traveled the shortest distances (284 km per visitor), resulting in the lowest travel EF per spectator. Although the TdF had a large proportion of “local” visitors (33 percent from London and 60 percent from South East England), overall the travel impact was much greater as a larger proportion of visitors traveled from outside the UK (8.8 percent; 512,000 visitors), and the majority of those journeys were by air.

For the R6N, the largest environmental impact was attributable to spectators’ food and drink purchases (61 percent of the total EF). This was due to a large proportion of visitors (30 percent) staying in overnight accommodation as part of their visit to Cardiff (an average 1.9 bed nights per staying visitor), and so would have made food and drink purchases in Cardiff on match and non-match days. In the case of the FA Cup, the vast majority of visitors were “day trippers” and

traveled back home the same day of the event, and so only made food and drink purchases on match day, hence the more limited economic (and related carbon) impact for this event.

In the case of the TdF, food and drink purchases accounted for less than 7 percent of the total EF for the event. Given that a large percentage of visitors lived in close proximity to the event (London 33.3 percent; Kent and Canterbury 60 percent), the environmental impact attributable to food and drink purchases was smaller compared to other events as there was a smaller net change in terms of additional resources consumed from take-away and other food services. The results from the ENVIO analysis are shown in the lower section of Table 15.2. The travel related impacts are a much lower percent of the total in relation to the FA Cup and the R6N. For these studies, the geographical boundary was the Cardiff economy, so spending and related carbon emissions were not counted for travel to and from Cardiff (only local travel was captured), whereas in the case of the TdF, a travel-related carbon estimate (including travel to the UK) was made, and this is some 144,000 tons (largely accounted for by international air travel), hence accounting for a much larger estimate (nearly 85 percent of the total).

Conclusion

This chapter has provided an assessment and comparison of the economic and environmental impacts of three major sport events that were held in the UK between 2004 and 2007. Similar to many economic impact studies, the scale of the environmental impacts associated with major events is linked to visitor numbers, their residential origin, spending/consumption patterns, travel distances and modes, and length of stay/duration of event.

The major sport events used as examples in this chapter had different characteristics and hence the visitors attending differed in spending and consumption profiles, resulting in varying scales of economic and environmental impacts, as well as different composition of impacts. The fact that different sports visitors have such different behaviors and consumption demands needs to be taken into consideration in future *ex ante* studies in predicting impacts.

The EF and ENVIO methods discussed in this chapter have the advantage of providing measures of environmental impact using single units of analysis (i.e., gha or t/Ce). The EF can also provide detailed results on the resource uses for different visitor activities such as travel and food and drink consumption. This is also possible using ENVIO, but through first translating the activity into spending and then industry output in some cases. This will enable decision makers to identify which activities are generated the largest impacts. The level of analysis can also provide decision makers with valuable insights as to which factors (i.e., consumption activities) are driving this impact. Furthermore, the categories of consumption used within the EF analysis relate to activities that are capable of being directly influenced by event organizers and others involved in planning for events – for example, increased provision of public transport services or increased recycling of waste generated at events. The EF analysis can be used to assess the impact of different policy scenarios designed to reduce any negative impacts. Again, the ENVIO approach can also be used in this way, but through the estimation of changes in spending linked with the different scenarios.

The footprint metaphor makes the EF a valuable communication tool as it personalizes sustainability by assessing the impact of consumption rather than that of production (Collins et al., 2007); hence the EF has the potential to initiate discussions about the environmental impacts of major sport events and why impacts may differ across events. The EF has also been used to measure the environmental impacts that residents generate via their direct consumption at their home location. By subtracting visitors' EF "at home" from their total EF at the event, the additional impact generated by visitors attending the event can be calculated.

The ENVIO approach, which is driven by spending or output impacts, is linked with a range of methodological issues relating to what should or should not be counted as part of additional economic activity, with implications for the emissions associated with the additional impact. However, both the EF and ENVIO frameworks produce quantifiable measures of the environmental “cost” of resource consumption activities which could be used to assist event organizers when monitoring and evaluating benchmarks across events. As primary data for the economic, EF and ENVIO methods can be collected using the same survey tools; in combination the results can help to provide a more holistic contribution to the evaluation of major events and provide policy makers with valuable information when considering which types of events to support.

Future research should now focus on profiling visitors and event types to assist our understanding of the environmental as well as the economic impacts of visitors at different events in different geographical locations. Such profiling would enable tools to be developed that could limit the need for extensive primary data and instead enable predications to be made on likely environmental impacts of major events and highlight where policy intervention could be most effective. Such tools could therefore be used by event organizers and policy makers to inform and develop policies on sustainable event management.

References

- Ayres, R. (2000). On the utility of the ecological footprint concept. *Ecological Economics*, 32, 347–349.
- Baade, R. A., & Matheson, V. A. (2004). The quest for the cup: Assessing the economic impact of the World Cup. *Regional Studies*, 38, 343–354.
- Becken, S., Simmons, D. G., & Frampton, G. (2002). Energy use associated with different travel choices. *Tourism Management*, 23, 343–354.
- Coleman, R. J. (2004). *Measuring success 2: The economic impact of 16 major sports events*. UK Sport. Retrieved from www.uk sport.gov.uk/publications/measuring-success-2
- Collins, A., & Flynn, A. (2005). A new perspective on the environmental impacts of planning: A case study of Cardiff’s International Sports Village. *Journal of Environmental Policy and Planning*, 7, 277–302.
- Collins, A., & Flynn, A. (2015). *The ecological footprint: New developments in policy and practice*. Cheltenham, UK: Edward Elgar Publishing.
- Collins, A., Flynn, A., Munday, M., & Roberts, A. (2007). Assessing the environmental consequences of major sporting events: The 2003/04 FA Cup Final. *Urban Studies*, 44, 457–476.
- Collins, A., Jones, C., & Munday, M. (2009). Assessing the environmental impacts of mega sporting events: Two options? *Tourism Management*, 30, 828–837.
- Collins, A., Munday, M., & Roberts, A. (2012). Environmental consequences of tourism consumption at major events: An analysis of the UK stages of the 2007 Tour de France. *Journal of Travel Research*, 51, 577–590.
- Collins, A., & Roberts, A. (2008, June). *Assessing the impact of UK events*. Paper presented at ESRC Seminar Series “Sustainable Consumption and Production,” London, UK.
- Crompton, J. L. (1995). Economic impact analysis of sport facilities and events: Eleven sources of misapplication. *Journal of Sport Management*, 9, 14–35.
- Crompton, J. L. (2006). Economic impact studies: Instruments for political shenanigans? *Journal of Travel Research*, 45, 67–82.
- Dawkins, E., Roelich, K., & Owen, A. (2010). *A consumption approach for emission accounting – the REAP tool and REAP data for 2006*. York, UK: Stockholm Environment Institute.
- Dolf, M., & Teehan, P. (2015). Reducing the carbon footprint of spectator and team travel at the University of British Columbia’s varsity sports events. *Sport Management Review*, 18, 244–255.
- Dolles, H., & Soderman, S. (2010). Addressing ecology and sustainability in mega-sport events: The 2006 Football World Cup in Germany. *Journal of Management and Organization*, 16, 603–616.

- Dwyer, L., Forsyth, P., & Spurr, R. (2006). For assessing the impacts of events: A computable general equilibrium approach. *Journal of Travel Research*, 43, 351–359.
- Ferng, J. J. (2002). Toward a scenario analysis framework for energy footprints. *Ecological Economics*, 40, 53–69.
- Gössling, S. (2002). Ecological footprint analysis as a tool to assess tourism sustainability. *Ecological Economics*, 43, 199–211.
- Gössling, S., Hansson, C. B., Horstmeier, I., & Saggel, S. (2002). Ecological footprint analysis as a tool to assess tourism sustainability. *Ecological Economics*, 43, 199–211.
- Gratton, C., Shibli, S., & Coleman, R. (2006). The economic impact of major sport events: A review of ten events in the UK. *The Sociological Review*, 50(2), 41–58.
- Hotchkiss, J. L., Moore, R. E., & Zoobay, S. M. (2003). Impact of the 1996 Summer Olympic Games on Employment and Wages in Georgia. *Southern Economic Journal*, 69, 691–704.
- Hunter, C. (2002). Sustainable tourism and the touristic ecological footprint. *Environment, Development and Sustainability*, 4, 7–20.
- Hunter, C., & Shaw, J. (2007). The Ecological Footprint as a key indicator of sustainable tourism, *Tourism Management*, 28(1), 46–57.
- Jones, C. (2008) Assessing the impact of a major sporting event: The role of environmental accounting, *Tourism Economics*, 14, 343–360.
- Lenzen, M., & Murray, S.A. (2001). A modified ecological footprint method and its application to Australia. *Ecological Economics*, 37, 229–255.
- London Organising Committee of the Olympic and Paralympic Games. (2012). *Carbon footprint study – methodology and reference footprint*. London: LOCOG.
- Mallen, C., Stevens, J., Adams, L., & McRoberts, S. (2010). The assessment of the environmental performance of an international multi-sport event. *European Sport Management Quarterly*, 10, 97–122.
- Matheson, V., & Baade, R. (2006). Padding required: Assessing the economic impact of the Super Bowl. *European Sport Management Quarterly*, 6, 353–374.
- McGregor, P. G., Swales, J. K., & Turner, K. R. (2004). The impact of Scottish consumption on the local environment: An alternative to the ecological footprint?. *Quarterly Economic Commentary*, 29, 29–34.
- Miller, R. E., & Blair, P.D. (2009). *Input-output analysis: Foundations and extensions* (2nd ed.). Cambridge, UK: Cambridge University Press.
- Moffatt, I. (2000). Ecological footprints and sustainable development. *Ecological Economics*, 32, 359–362.
- Patterson, T. M., Nicolucci, V., & Marchettini, N. (2008). Adaptive environmental management of tourism in the Province of Siena, Italy using the ecological footprint. *Journal of Environmental Management*, 86, 407–418.
- Peeters, P., & Schouten, F. (2006). Reducing the ecological footprint of inbound tourism and transport to Amsterdam. *Journal of Sustainable Tourism*, 14, 157–171.
- Ponsford, I. F. (2011). Actualizing environmental sustainability at Vancouver 2010 venues. *International Journal of Events and Festival Management*, 2, 184–196.
- Preuss, H. (2004). *The economics of staging the Olympics: A comparison of the Games 1972–2008*. Cheltenham, UK: Edward Elgar.
- Preuss, H., Könecke, T., & Schütte, N. (2010). Calculating the primary economic impact of a sports club's regular season competition: A first model. *Journal of Sport Science and Physical Education*, 60, 17–22.
- Preuss, H., Seguin, B., & O'Reilly, N. (2007). Profiling major sport event visitors: The 2002 Commonwealth Games. *Journal of Sport and Tourism*, 12, 5–23.
- Shibli, S., & Gratton, C. (2001). The economic impact of two major sporting events in two of the UK "National Cities of Sport." In C. Gratton & I. P. Henry (Eds.), *Sport in the city* (pp. 78–89). London: Routledge.
- Solberg, H. A., & Preuss, H. (2007). Major sport events and long terms tourism impacts. *Journal of Sport Management*, 21, 215–236.
- van den Bergh, J. C. J. M., & Verbruggen, H. (1999). Spatial sustainability, trade and indicators: An evaluation of the 'ecological footprint'. *Ecological Economics*, 29, 61–72.
- World Wildlife Fund. (2014). *Living planet report 2014*. Gland, Switzerland: WWF.

16

ENVIRONMENTAL CERTIFICATIONS OF SPORT FACILITIES AND EVENTS

Sheila N. Nguyen

The delivery of the industry's core business is sport and recreation for spectatorship and participation. Across the industry, buyers, suppliers, vendors, partners, fans, employees, athletes, government, and others partake in events, matches, and celebrations and use infrastructure, spaces, and places of play. With the growth of the sport and recreation industry globally, its stakeholders and where they engage contribute to its overall footprint on our natural environment; the level of impact and the rate of resource exhaustion influencing changing climate is concerning. Thus, the sport and recreation industry is taking an active role in protecting its most important business asset: the natural environment.

The world of environmental protection for its sustainability (environmental sustainability [ES]) is uncharted territory for most of the sport and recreation industry, and as such, the journey of knowledge acquisition to action implementation is daunting and, as it is fairly untrodden, the opportunities to improve its footprint are limitless. The questions are where to begin and what are the ways to get to the destination. For the sport and recreation industry, walking the ES path is like walking in the dark. Therefore, the advice given to the industry is this: when you want to know where you're going in the dark, you need a flashlight – and in the ES game, data and measurement can be that.

In its attempt to protect the natural environment, the sport and recreation industry has taken the approach of measuring so that it can more effectively manage the actual resource use and its carbon output (Friend, 2009; Makower, 2009); reflection on the present location and what steps to take along the ES journey (through process and measurement) will “shed light” on what seems a formidable set of challenges to tackle.

The aim is to minimize our impact on the environment, as failing to do so can result in sea level rise, global temperature rise, warming oceans, shrinking ice sheets, declining Arctic sea ice, glacial retreat, extreme natural events, ocean acidification, and decreased snow cover (NASA, 2016). “Climate neutral” is the state in which the carbon footprint and respective emissions are in harmony with or neutral to the extent that relevant climate change impact is not furthered. “Climate positive” refers to a footprint and presence that create a state where a given set of impacts is not only neutralized, but positively contributes to the mitigation of climate change impact (through carbon positive actions such as offsetting).

The sport and recreation industry has started to walk towards a climate-neutral, or even better, a climate-positive position, with some in the industry moving at “runner's pace.” For

others, the path toward a better environmental position is considered dark and one that is hard to traverse. Knowledge in the form of data and measurement provides light, with accreditation acting as landmarks along the way to indicate that one is moving along in the right direction and improving over time. How and what mark the “right” direction for effective management resource use and carbon output are contingent on the key precept that knowledge can make the choice of process and the path paved “right,” specifically with knowledge related to:

- 1 The destination
- 2 The history
- 3 The current state
- 4 The desired outcomes
- 5 The options.

Summarizing the precept, to get to the destination from where one is currently, and to achieve the desired outcomes, require the consideration of any limitations or pre-existing conditions (i.e., history) that may make it challenging to get to the end point and in the manner one wants to get there (i.e., the options). The discussion on the connection between sport and recreation and environmental sustainability, the opportunities where action can be implemented, and the options to take toward the established eco-actions requires knowledge to understand where the starting point is, where the end point is, the steps to take along the journey, and how movement along that path is progressing.

Accountancy, measurement, and accreditation

In the global market of environmental accountancy, measurement, and economics, there are several standards of framing, measuring, costing, and valuating, which often vary based on geographical and regional standards and related governance, scarcity in the resource market, and sector specifics and unique impacts. Set ES targets, relevant cultural expectations, and systems (e.g., legislation and policy, infrastructure) vary depending on the market, and thus, the rate of adoption, adaptation, and mitigation, as well as the choice of relevant certifications, are based on the market in which the interested party is located and at which stage it is experiencing (e.g., lifecycle, ES strategy).

It is prudent to distinguish between *accreditation* and *certification*. Muse (2008) defines accreditation as a “third-party attestation related to a conformity assessment body conveying formal demonstration of its competence to carry out specific conformity assessment tasks” (para. 6) and *certification* as a “third-party attestation related to products, processes, systems or persons” (para. 7). Internally, certification is used for a number of reasons, including to provide feedback for baselining, operational progress, and milestone and to identify areas of possible improvement. For external audiences, having a “badge” often quickly provides signals that can support an audience response and judgment, which can lead to a number of outcomes due to the “sense making” (e.g., see attribution theory; Becker-Olsen & Hill, 2006; Heider, 1958; Jones & Davis, 1965). Perceptions can be shaped by the signals given through “badges,” which lead to increased levels of trust, legitimacy, and positive consumer behavior and can affect brand positioning (and, ultimately, pricing, competitive advantage, etc.).

Generally speaking, the practice of ecological measurement and accountancy by way of the international standards of the System of Environmental-Economic Accounting (SEEA) officially launched in the early 1990s and was adopted by the United Nations Statistical Commission as a statistical standard in 2012 (United Nations, 2016). The statistical standard and the area of environmental accountancy and economics take into account resource use and places value on the

costs related to impact through matters such as contamination remediation, materials management costs, environmental taxes, and other externalities. The SEEA standard is one that is adopted and used at a global level, identifying measures that inform inputs-throughputs-outputs profiles, stock, and flow of nations and contributes to the social and environmental components that make up a national profile that goes beyond a nation's gross domestic product (European Commission, 2015).

At a sector and industry level, a number of measurement frameworks, indicators, and tools have been developed; for the sport and recreation industry, the need for these to direct environmental improvement is growing. There is a growing demand by the sport and recreation industry to identify its baseline, measure its progress, and manage its impact to adhere to sector, national, and international climate targets and objectives. Although the sport and recreation sector is mainly composed of entities that are considered "voluntary" participants in the climate change regulation and imposed legislations, the industry as a whole cannot avoid the business decision to future proof, and that requires ongoing improvement towards climate-neutral, or better yet, climate-positive operations.

Historically, the 1994 Lillehammer Olympic Games has been credited for sparking the first interest for sport's role in ES (International Olympic Committee, 2014). Since then, the value of environmental sustainability has embedded itself in the Olympic Movement, and globally, alliances of professional, amateur, and recreational sport entities have congregated under a number of regional alliances committed to environmental stewardship, including British Association for Sustainable Sport (United Kingdom), Golf Environment Organization (the global golf industry), Green Sports Alliance (North America), and the Sports Environment Alliance (Australasia) (British Association for Sustainable Sport, 2016; Golf Environment Organization, 2016; Green Sports Alliance, 2016; Sports Environment Alliance, 2016). Beyond Olympic and mega-sport events, professional, amateur, and recreational sports are contributing by way of raising awareness, managing their own environmental impact, and exploring new ways to participate in the movement (Babiak & Trendafilova, 2011; Nguyen, Trendafilova, & Pfahl, 2014; Trendafilova, McCullough, Pfahl, Nguyen, Casper, & Picariello, 2014). In fact, "sustainable entertainment" through sport has been the positioning statement for the newest Federation Internationale de l'Automobile (FIA) sanctioned motorsport event, Formula E, whose races are run by vehicles using electric and completely renewable energy (FIA Formula E, 2016).

The global recognition of the link between the future of the sport and recreation industry, along with the protection of the natural environment, is becoming much stronger, and in tandem, the need to identify what is happening and who is making "progress" has grown to the extent that frameworks, measurement via certification, and accreditation are being developed and implemented. These ES "tools" are being developed as a means to provide management-improvement indicators and to enhance external stakeholders' awareness and confidence in the standard of the products, services, systems, and individuals who participate in the ES in sport and recreation movement.

Certification opportunities

Methods for disposing of materials; sourcing and treating water; and the acquisition, choice, and use of energy have gone through iterations of evolution, changing in response to significant events, policy enactment, access to technology, and other innovations (Environmental Protection Agency, 2016; Friend, 2009; Klein, 1999; Lewis, 1985; Makower, 2009; United Nations, 1987). Other factors have contributed to the changing landscape of environmental protection, with one of the most influential events being the creation of the U.S. Environmental Protection Agency (EPA) in 1970. The EPA provided a list of objectives aimed at ensuring a sustainable

future: “Integrating efforts with a new commitment to innovation, the high-level use of data and information, partnerships, incentives, new and expanded constituencies, and environmental education will build momentum” (EPA, 2016, para. 12). The myriad of options for data and information come from data collation, standardization, and evaluation found across certifications in the market. Within the sport industry, most of them are focused on assessing the built environment and taken up mainly by sport rather than recreation (in the instances where recreation is based in natural environments, such as hiking and skiing).

The “built environment” is conceptualized and characterized by four interrelated attributes:

- 1 It is a space.
- 2 It is created with an intention to service particular needs.
- 3 It has a mediating effect between the space and its environment.
- 4 It has potential positive or negative impact on its environment. (McClure & Bartuska, 2007)

In sport, the built environment comes in various forms such as grounds, fields, facilities, roads, tracks and trails, office space, clubhouses, training facilities, and the landscape that surrounds it (e.g., the surrounding flora, natural barriers). The built environment has its wide-ranging users; in the sport and recreation industry, these users range from those who engage with the core business (such as employees and fans) to commercial and community partners; facility designers and engineers; local and national government entities; and others who create, build, manage, and use the spaces of play. The sport and recreation industry has linked itself to ES movement, and as it negotiates the challenges and opportunities it is presented, credentialing and certification have been identified as means to signify progress in the right direction.

As earlier noted, the “right” decision regarding certification is dependent on a number of factors: the cited destination and its specific ES objectives/outcomes; what efforts have already been made; the pre-existing state of play; and awareness of what tactics, actions, and paths can be taken to get to the end point (Etsy & Winston, 2009; Makower, 2009). Thus, depending on the core purpose of the built environment and its ES-related objectives, the choice of certification system or standard varies, as do their requirements. Therefore, the first step to approaching the process of certification requires an assessment of the ES objective(s) to engage in such a process and choose the accreditation, which will have the intended return on the respective outcomes.

Some certifications can assess a number of variables and factors, including the built environment and the level or quality of stakeholder use. When considering whether (and when) to pursue certification – and what system to pursue – decision makers should answer the following questions:

- 1 What is your ES strategy (long-term vision)?
- 2 What are your related ES objectives?
- 3 What is your history in measurement and certification?
- 4 What resources do you have to contribute to the certification process(es)?
- 5 What is your rationale for choosing to pursue certification at this time?

Gold, silver, bronze: where do you want to be and how do you get there?

In the ES credentialing world, there are a number of options to evaluate various elements of the business. For sport, the credentialing bodies are adapting existing measurements and/or developing assessments specific to various sectors and industries. There are assessments that evaluate the

ES sensitivity, capability, and performance of the built environment and others that rate the level or quality of stakeholder use and the appropriateness and effectiveness of the holistic engagement of stakeholders to physical space, often known as the environmental management system (EMS). The following will highlight particular international certifications, as well as some that are specific to particular regions and markets.

The following set of descriptions is by no means an exhaustive list of existing standards, but rather an overview of what is in the market. Further, the presentation of certification should not be misunderstood as encouragement to undertake the certification process or the noted kind. Certification should only be undertaken if it makes sense within the ES strategy; in fact, there are those who will never undertake certification for various reasons (e.g., not aligned with ES strategy, under-resourcing, return on investment is not justifiable.). Thus, this section of the chapter is purely written descriptively and without endorsement for any particular avenue; this is purely a presentation of various opportunities to demonstrate the breadth of options in the market.

Management and operations

International and national ES targets and objectives frame the standards market. The conditions for which these ES targets and objectives are developed are many and varied and dictate the opportunities, demands, and limitations as a result of the conditions of the geographical location, product and supplier markets, infrastructure capabilities and accessibility, natural resource constraints, and scarcity, among other factors. At the international level, assessment of standards has often been linked to the International Organization for Standardization (ISO). Based in Geneva, Switzerland, the ISO describes itself as:

[A]n independent, non-governmental international organization with a membership of 161 national standards bodies. Through its members, it brings together experts to share knowledge and develop voluntary, consensus-based, market relevant International Standards that support innovation and provide solutions to global challenges.

(International Organization for Standardization, 2016a, para. 1)

With its various knowledge bodies and other stakeholders, ISO provides standards that provide the frame from which to certify that materials, products, processes, and services are specified to its intent and purpose. It is prudent to note that ISO develops standards, but is not a certifying body itself. For the sport and recreation industry, three ISO standards are relevant and adopted for specific purposes: social responsibility (ISO 26000); environmental management (ISO 14001); and event sustainability management systems (ISO 20121) (International Organization for Standardization, 2016a, 2016b, 2016c, 2016d). In addition to these three standards, there exists ISO 17021:2011 (Conformity assessment – Requirements for bodies providing audit and certification of management systems). The purpose of ISO 17021:2011 is to ensure auditor competence, which contributes greatly to the evaluations in general. There are some clear distinctions – and therefore, uses – across these standards, as delineated next.

ISO 26000

Thinking globally, environmental sustainability is a social issue, as its degradation affects human and social quality. Therefore, it is sensible to mention ISO 26000 is “intended to assist organizations in contributing to sustainable development” (ISO, 2016d, para. 2). Of the three ES-related

ISO standards, ISO 26000 is the most general and provides a basis from which social (and environmental) actions can be identified, assessed, strategized, and enacted (Pelham, 2011; Salcines, Babiak, & Walters, 2013).

ISO 14001

ISO 14001 supports environmental performance by setting standards for an effective environmental management system (ISO, 2016b). This standard provides a guide to approaching environmental performance in a systemic manner and, as noted by ISO, has the “intended outcomes [of] . . . enhancement of environmental performance; fulfilment of compliance obligations; [and] achievement of environmental objectives” (ISO, 2016b, para. 2). The key distinction of this particular set of standards is the focus on the management system that supports strategy, decisions, and actions meant to achieve ES outcomes. Although the standard is quite flexible in the application for various sizes, types, and natures of organizations, the application must be done in full to be considered within ISO 14001 standards. The benefit of such a standard is that it complements many of the existing built environment certifications. Addressing the standards for an environmental management system deals with the “user” end of the equation, providing a holistic approach to environmental practicality. Of note, Manchester United became the first English club to achieve ISO 14001 certification; it also acquired the sustainable events standard, ISO 20121, discussed further next (Russell, 2012).

ISO 20121

The latest developed and relevant ISO standard for ES in the sport and recreation industry is ISO 20121, which was developed prior to, and ultimately used for, the 2012 London Olympics (ISO, 2016c). The goal of this standard is to set a framework for sustainable event management in a structured manner. As there are several “moving parts” and many hands in the mix of planning and delivering mega-events, these events require a unique understanding of how best to address ES in the respective conditions. Thus, there was a gap in the standards marketplace for events and, therefore, the development of ISO 20121 was timed perfectly to provide guidance for tactical and operational decision-making, alongside an ES-tuned systematic approach to supporting ES decisions within events of all sizes, including mega-event conditions and contexts (e.g., resource procurement, efficiency, and allocation). The launch of ISO 20121 was valued for its focus on management systems that can support sustainability actions. For the London Games, it was used to frame and support five sustainability themes: climate change, waste, biodiversity, inclusion, and healthy living. As listed by Lambert (2013), a key achievement of the London Games (and with the support of its various delivery partners) was that it became the first Olympic Games to achieve a zero-waste-to-landfill outcome through savvy materials management. Beyond that, they were able to realize the following:

- Carbon management to deliver a low-carbon Games
- Delivering a zero-waste Games
- Providing sustainable and accessible transport solutions
- Using the Games to showcase the economic benefits of sustainability
- Promoting sustainable living by making sustainability a visible part of the Games
- Ensuring the Olympic Park legacy contributes to the regeneration of communities in east London.

The London Organising Committee of the Olympic, Paralympic Games (LOCOG) was able to claim many environmental successes, such as implementing a venue legacy program alongside infrastructure use of renewable source of energy (e.g., use of temporary structures, repurposing the Olympic village, use of renewable energy) and a food and packaging composting program. David Stubbs, Head of Sustainability for LOCOG, reflected on the keys to success for an environmental undertaking of this scale and stated that it is critical to establish leadership commitment, identify significant stakeholders, and address main issues of concern early on, which assists in keeping costs low and focus clear (Lambert, 2013). ISO develops standards by which certifying bodies will frame their evaluations. For the sport and recreation industry, infrastructure (versus management systems, stakeholder management, etc.) has often been the obvious asset to evaluate; this tendency, however, does not diminish the importance of operational, stakeholder, and management impact. As a result of the prominence of built environment evaluation, the sport and recreation industry has explored building design and construction sector certifications as starting options in ES certification.

Building certifications

Building Research Establishment Environmental Assessment Methodology (BREEAM), the first certifying method for sustainability assessment for buildings, was founded in 1990, and since then, has been used to certify more than 540,000 developments across 70 countries. Its certification covers nine areas of evaluation: energy, health, and well-being; innovation; land use; materials; management; pollution; transport; waste; and water (BREEAM, 2016). Moreover, BREEAM uses performance benchmarks to evaluate various stages of building, including procurement, design, construction, and operations (BREEAM, 2016).

Similarly, Leadership in Energy and Environmental Design (LEED), housed under the U.S. Green Building Council (USGBC), has grown its share of the sport infrastructure marketplace. Although U.S. based, LEED certifications have become adopted internationally by more than 150 countries; notably, Australia saw its first with Margaret Court (an Australian Open facility), which became LEED Gold certified in 2015 (Hopkins, 2015). A number of North American stadiums have adopted LEED certifications and are detailed in reports such as the Green Sports Alliance's *Game Changer* report (NRDC, 2012).

The set of LEED certifications are many and varied based on the type of infrastructure, with each having differential requirements and weight allocations. The five LEED certifications address various types of buildings and include Building Design and Construction (B+C), Interior Design and Construction (ID+C), Building Operations and Maintenance (O+M), Neighborhood Development (ND), and Homes. Each has specific foci, with LEED (2016a) explaining the certifications as follows:

- *Building Design and Construction (B+C)*: Applies to buildings that are being newly constructed or going through a major renovation; includes New Construction, Core & Shell, Schools, Retail, Hospitality, Data Centers, Warehouses & Distribution Centers, and Healthcare.
- *Interior Design and Construction (ID+C)*: Applies to projects that are a complete interior fit-out; includes Commercial Interiors, Retail and Hospitality.
- *Building Operations and Maintenance (O+M)*: Applies to existing buildings that are undergoing improvement work or little to no construction; includes Existing Buildings, Schools, Retail, Hospitality, Data Centers, and Warehouses & Distribution Centers.

- *Neighborhood Development (ND)*: Applies to new land development projects or redevelopment projects containing residential uses, nonresidential uses, or a mix. Projects can be at any stage of the development process, from conceptual planning to construction; includes Plan and Built Project.
- *Homes*: Applies to single family homes, low-rise multi-family (one to three stories), or mid-rise multi-family (four to six stories); includes Homes and Multifamily Lowrise and Multifamily Midrise.

The common denominator across the five different types of certifications is in the shared key areas of assessment. This approach universally covers 11 steps (LEED, 2016a, 2016b):

- Step 1. Initiate discovery phase:** Do your research.
- Step 2. Select LEED rating system:** Choose the appropriate one for your lifecycle stage and phase within the ES strategy.
- Step 3. Check minimum program requirements:** Comply with the certification minimum program requirements (MPRs).
- Step 4. Establish project goals:** Brainstorm and prioritize project goals.
- Step 5. Define LEED project scope:** Set the boundaries of evaluation.
- Step 6. Develop LEED scorecard:** Identify the relevant credits, options, and certification levels.
- Step 7. Continue discovery phase:** Establish ongoing control points to reassemble as a team and to provide continuous insight to ensure calibration and that the project is on track.
- Step 8. Continue iterative process:** An extension and much like a continuous loop of control mechanisms (e.g., testing) to ensure that calibration for validity and reliability is achieved.
- Step 9. Assign roles and responsibilities:** Delegate and designate for various roles in the project to assist the process and ensure there is ownership and accountability for decision-making and progress.
- Step 10. Develop consistent documentation.** Ensure documentation and collation of data are consistent to ensure that the final submission for certification is cohesive and data are reliable.
- Step 11. Perform quality assurance review and submit for certification:** Review for quality control to ensure clarity, validity, consistency, and reliability of information.

Of the steps, the most critical is to establish the project goals (Step 4), as this will set the direction for every decision thereafter (e.g., type of certification, timeline, budget, requirements, scope, roles).

Beyond the approach and steps, and as earlier mentioned, LEED certifications share areas of evaluation across the different rating systems: sustainable sites, water efficiency, energy and atmosphere, materials and resources, indoor environmental quality, and innovation in design. For sport structures, these areas of interest include specific areas of evaluation such as (but not limited to):

- 1 Sustainable Sites
 - a. Low-impact site management – pesticides
 - b. Transportation management – incentivizing public transport use

- c. Landscaping – xeriscaping
 - d. Storm water management
 - e. Heat island reduction – rooftop gardens, minimizing parking space
 - f. Light pollution – controls/structural
- 2 Water Efficiency
- a. Plumbing fixtures and fittings – low flow
 - b. Water use measurement – sub-meters
 - c. Water-efficient landscaping – reduction of potable water, use of non-potable water
 - d. Cooling tower management
- 3 Energy and Atmosphere
- a. Energy best management practices – operating plans
 - b. Commissioning and auditing – calibration, intent
 - c. Green power – wind, solar, geothermal
 - d. Energy performance measurement – energy star
 - e. Refrigerant impacts – CFC, HCFC, halons, bromine
- 4 Materials and Resources
- a. Purchasing policies
 - b. Waste management policies
- 5 Indoor Environmental Quality
- a. Outdoor air delivery and monitoring – CO₂ sensors
 - b. IAQ best management practices – ASHRAE, MERV 13+
 - c. Occupant comfort – temperature, quality, acoustics
 - d. Green cleaning – volatile organic compounds (VOCs)
- 6 Innovation in Design: ideas to more effectively engage stakeholders and users

All six LEED areas are relevant to the sport industry, but the two “top of mind” areas of impact are energy (e.g., turn off the lights!) and materials (e.g., recycling is good). Considering energy, the sport industry has many opportunities to improve its footprint. For example, Jay Whelan, founder and president of the Green Revolution, noted that:

A typical group cycling class with about 20 bikes has the potential to produce up to 3.6 megawatts (3,600,000 watts) of renewable energy a year. This is equivalent to the amount of power needed to light 72 homes for a month while also reducing carbon emissions by over 5,000 pounds.

(LaRue, 2009, para. 3)

With materials, it was found that Nike and Puma were among a list of six businesses who were taking an “ecosystem” approach to “zero impact” through developing and integrating policies that were driven with a long-term strategic vision, making them authentically committed to the sustainability agenda (GreenBiz, 2012). LEED certifications provide the guidelines, scorecard, and areas that align with a methodical approach to assessment and collation of data and measurement for continuous improvement.

Other rating systems

Beyond the standards set by ISO and the certification guidelines of BREEAM and LEED, the sport industry has options that extend to holistic certifications like those offered by the Council for Responsible Sport (CRS), which covers specific social and environmental criteria and have certified events in countries like the United States (mainly), Canada, Colombia, Italy, and Mexico (CRS, 2016). Further, certain certifications are industry (sport) specific, such as the Golf Environment Organization's (GEO) certification of sustainable golf courses (GEO, 2016).

Within specific geographical markets, standards and certifications are created and administered to take into account local regulations and legislation among other unique building conventions, such as the Comprehensive Assessment System for Built Environment Efficiency (CASBEE) in Japan, a tool for evaluating and rating built environment environmental performance (CASBEE, 2016). Similarly, HQE promotes sustainable building construction and management in France (HQE, 2016), and the National Australian Built Environment Rating System (NABERS) is used to measure and rate the environmental performance of buildings, tenancies, and homes (National Australian Built Environment Rating System, 2016). Certifications like Switzerland's Minergie and Germany's KfW Efficiency Housing program provides certification for low-energy consumption buildings (KfW, 2016; Minergie, 2016).

These certifications represent only a few of the many national and international building efficiency and environmentally sustainable assessments in the marketplace; the key for managers is to choose the appropriate evaluation based on the standards that align well with the objectives, lifecycle, resource availability, and set targets and outcomes for the environmental sustainability effort.

Assessment is one component of the equation; the public facing end of ES engagement is often manifested in reporting and communication of the ES strategy, actions, and outcomes. Reporting is used to improve engagement of stakeholders and to communicate an organization's ES journey and plan to the public with several benefits in doing so (e.g., increased levels of ES awareness and knowledge, encouragement of ES behaviors). There are several types, approaches, and frameworks for reporting; however, the Global Reporting Initiative (GRI) has developed a number of reporting guidelines – some for sector-specific needs (e.g., events) – and has established partnerships with international governing bodies (e.g., UNEP, OECD, ISO, The Global Compact) to the extent that it is positioned as the mainstay in the non-financial reporting world. The GRI was founded in 1997, initiated by the efforts of the Coalition for Environmentally Responsible Economies (CERES), the Tellus Institute, and the United Nations Environmental Programme (UNEP), and investors served as the target audience. The sustainability reporting guidelines developed by the GRI is in its fourth iteration (G4), and many consultancies, certifying bodies, governments, businesses, and institutes utilize the guidelines in their reporting for performance across sustainability issues, including climate change, human rights, and corruption (GRI, 2016).

Kaizen training: small steps toward betterment, made every day

As noted earlier, the certifications are often tied to assessing the built environment. Further, most of the certifications easily assess traditional commercial and residential buildings, hospitals, and shopping centers. These existing options are restricted to conventional and mainstream structures, which presents limitations for providing ES solutions to the sport and recreation industry.

As previously alluded, the sport and recreation industry is complex, and as the industry's engagement with the climate change movement is relatively new, the parallel ES industries and

markets are adapting to the new market needs and interests. The development of the ISO 20121 standard, developed in 2012, is an example of the market responding to the growing sector demand. The consideration and creation of industry-specific solutions is critical for a number of reasons. First, it provides guidelines, certifications, and standards that are relevant and meaningful. Second, the more available and relevant the ES solutions become, the greater the likelihood and rate of industry uptake. Third, the standards have enhanced the ability to calibrate and improve sector-linked measurement (e.g., baselining, benchmarking) and progress over time.

At present, the existing measures can be useful, but additional kaizen steps can be taken for additional improvement, including (1) the specification of standards, certifications, and measurement that can be differentially benchmarked (e.g., large-scale vs. small-scale facilities); (2) global-sector metrics that are meaningful (e.g., usage patterns in conventional structures are not equivalent to sport structures, such as variable energy); and (3) accounting, data housing, and interpretation that is more powerful (e.g., one-stop shop deposit of data, better accounting practices, ability to extrapolate and communicate implications).

The gaps and mismatch between what exists and where to innovate in ES accreditation for the sport and recreation industry provide context for some key areas of research areas. First, the industry must work to validate assumptions. With regard to measurement, several assumptions are being made regarding the sport and recreation industry needs. The ES standards to evaluate traditional settings (e.g., commercial buildings, hospitals, etc.) have often been adapted, repurposed, and ultimately applied to the sport and recreation built environment. The approach of repurposing existing measures creates an imperfect system of measurement; therefore, there is a need to explore what the actual ES measurement needs are within the sport and recreation industry. The impetus is there to innovate and create sector-specific evaluation criteria that make sense and are meaningful, such as demand related to the variability of venue operations (i.e., the sporadic nature of its use) and recognition of innovative impact of the industry on ES outcomes (e.g., fan and spectator transport choices to and from the venue).

The second task moving forward is to determine the factors that affect an organization's decision to pursue certification. It was noted that contextual factors (e.g., governance, legislation, regional climate risks) and internal factors (e.g., leadership, stage in lifecycle, capacity) affect the choice and adoption of certification type. Thus, researchers should examine what contextual and internal factors do affect and influence certification choice and how much these factors influence the decisions.

Lastly, researchers must evaluate whether certification is worthwhile. Some organizations choose to engage in the certification process, and others are quiet achievers. The choice whether to engage in formal evaluation is made based on a number of factors, including the expectation for return on financial and other resource investment, along with reputational benefit and impact, but little is known about the reality of the return on such investment. Consequently, future research should include cost-benefit analysis and other analyses of how much return can be gained from engaging in formal certification (e.g., impact on reputation, signaling to markets, commercial opportunities).

In conclusion, the sport and recreation industry is approaching an untested frontier in ES stewardship, and the use of measures, data, and certification is a way to shed light on what is seemingly a dark and daunting path toward environmental and social betterment. Future proofing the sport and recreation industry is the end game, and certification can act as one part of the industry's ES journey. Through further research and exploration, the tested value of certification can be validated, and the findings may contribute to the improvement of the existing measures so that they are more reliable, useful, and meaningful to the sport and recreation industry. The key to achievement is through direction, validation, and continual improvement. Through the

use of tools and mechanisms like certification, the industry can become a better steward of the planet while simultaneously protecting the spaces and places on which humans play.

References

- Babiak, K., & Trendafilova, S. (2011). CSR and environmental responsibility: Motives and pressures to adopt green management practices. *Corporate Social Responsibility and Environmental Management*, 18(1), 11–24.
- Becker-Olsen, K. L., & Hill, R. P. (2006). The impact of sponsor fit on brand equity: The case of nonprofit service providers. *Journal of Service Research*, 9(1), 73–83.
- BREEAM. (2016). *Why BREEAM?* Retrieved from www.breeam.com/why-breeam
- British Association for Sustainable Sport (BASIS). (2016). Retrieved from www.basis.org.uk
- Comprehensive Assessment System for Built Environment Efficiency (CASBEE). (2016). Retrieved from www.ibec.or.jp/CASBEE/english
- Council for Responsible Sport (CRS). (2016). *Home*. Retrieved from www.councilforresponsiblesport.org
- Environmental Protection Agency (EPA). (2016). *EPA's themes: Meeting the challenge ahead*. Retrieved from www.epa.gov/aboutepa/epas-themes-meeting-challenge-ahead
- Etsy, D. C., & Winston, A. (2009). *Green to gold: How smart companies use environmental strategy to innovate, create value, and build competitive advantage*. Hoboken, NJ: John Wiley & Sons, Inc.
- European Commission. (2015). *Beyond GDP: Measuring progress, true wealth, and the well-being of nations*. Retrieved from http://ec.europa.eu/environment/beyond_gdp/background_en.html
- Formula E. (2016). *Home*. Retrieved from <http://fiaformulae.com/>
- Friend, G. (2009). *The truth about green business*. Upper Saddle River, NJ: FT Press.
- Global Reporting Institute (GRI). (2016). *GRI at a glance*. Retrieved from www.globalreporting.org
- Golf Environment Organization (GEO). (2016). *Homepage*. Retrieved from www.golfenvironment.org
- GreenBiz. (2012). *What sets Nike, Nestle apart in their sustainability strategies?* Retrieved from www.greenbiz.com/news/2012/08/03/nike-nestle-sustainability-strategy
- Green Sports Alliance (GSA). (2016). *Homepage*. Retrieved from www.greensportsalliance.org
- Heider, F. (1958). *The Psychology of Interpersonal Relations*. New York, NY: Wiley.
- Hopkins, P. (2015, September 2). Margaret Court Arena acs LEED sustainability certification. *Sydney Morning Herald*. Retrieved from www.smh.com.au/business/property/margaret-court-arena-accs-leed-sustainability-certification-20150901-gjc9ok.html
- HQE. (2016). *Discover and join HQE*. Retrieved from www.behqe.com/
- International Olympic Committee. (2014). *Olympic Games legacy: Lillehammer 1994 set the stage for sustainable games legacies*. Retrieved from www.olympic.org/news/lillehammer-1994-set-the-stage-for-sustainable-games-legacies/219117
- International Organization for Standardization (ISO). (2016a). *About ISO*. Retrieved from www.iso.org/iso/home/about.htm
- International Organization for Standardization (ISO). (2016b). *ISO 14001: 2015: Environmental management systems – requirements with guidance for use*. Retrieved from www.iso.org/iso/home/store/catalogue_tc/catalogue_detail.htm?csnumber=60857
- International Organization for Standardization (ISO). (2016c). *ISO 20121:2012: Event sustainability management systems – requirements with guidance for use*. Retrieved from www.iso.org/iso/home/store/catalogue_tc/catalogue_detail.htm?csnumber=54552
- International Organization for Standardization (ISO). (2016d). *ISO 26000:2010: Guidance on social responsibility*. Retrieved from www.iso.org/iso/home/store/catalogue_tc/catalogue_detail.htm?csnumber=42546
- Jones, E. E., & Davis, K. E. (1965). From acts to dispositions: The attribution process in social psychology. In L. Berkowitz (Ed.), *Advances in experimental social psychology* (Vol. 2, pp. 219–266). New York, NY: Academic Press.
- KfW. (2016). *Housing, home modernisation and energy conservation*. Retrieved from www.kfw.de
- Klein, N. (1999). *No logo*. New York, NY: Picador.
- Lambert, G. (2013). *Event sustainability management – ISO 20121 passes 2012 Olympic Games test*. Retrieved from www.iso.org/iso/home/news_index/news_archive/news.htm?Refid=Ref1690

- LaRue, L. (2009). Group cycling class generates and captures clean, renewable energy. *Intent Blog*. Retrieved from <http://intentblog.com/group-cycling-class-generates-and-captures-clean-renewable-energy/>
- Leadership in Energy and Environmental Design (LEED). (2016a). *Better buildings are our legacy*. Retrieved from www.usgbc.org/leed
- Leadership in Energy and Environmental Design (LEED). (2016b). *Getting started*. Retrieved from www.usgbc.org/guide/bdc
- Lewis, J. (1985). The birth of the EPA. *Environmental Protection Agency*. Retrieved from www.epa.gov/aboutepa/birth-epa
- Makower, J. (2009). *Strategies for the green economy*. New York, NY: McGraw-Hill.
- McClure, W. R., & Bartuska, T. J. (2007). *The built environment: A collaborative inquiry into design and planning*. Hoboken, NJ: John Wiley & Sons.
- Minergie. (2016). *Homepage*. Retrieved from www.minergie.ch
- Muse, R. (2008, June 2). What's in a name: Accreditation vs. certification? *Quality Magazine*. Retrieved from www.qualitymag.com/articles/85483-what-s-in-a-name-accreditation-vs-certification
- NASA. (2016). *Climate change: Vital signs of the planet*. Retrieved from <http://climate.nasa.gov>
- National Australian Built Environment Rating System (NABERS). (2016). *NABERS: Built on performance*. Retrieved from www.nabers.gov.au
- National Resource Defense Council (NRDC). (2012). *Game changer report*. Retrieved from www.nrdc.org/sites/default/files/Game-Changer-report.pdf
- Nguyen, S., Trendafilova, S., & Pfahl, M. (2014). The natural resource based view of the firm (NRBV): Constraints and opportunities for a green team in professional sport. *International Journal of Sport Management*, 15, 485–517.
- Pelham, F. (2011). Sustainable event management: The journey to ISO 20121. In J. Savery & K. Gilbert (Eds.), *Sustainability and sport* (pp. 43–49). Champaign, IL: Common Ground.
- Russell, S. (2012). *14001 first for Manchester United*. Retrieved from www.environmentalstonline.com/article/14001-first-manchester-united
- Salcines, J. L. P., Babiak, K., & Walters, G. (2013). *Routledge handbook of sport and corporate social responsibility*. New York, NY: Routledge.
- Sports Environment Alliance (SEA). (2016). *Homeground*. Retrieved from www.sportsenvironmentalliance.org
- Trendafilova, S., McCullough, B., Pfahl, M., Nguyen, S. N., Casper, J., & Picariello, M. (2014). Environmental sustainability in sport: Current state and future trends. *Global Journal on Advances Pure and Applied Sciences*, 3, 9–14.
- United Nations. (1987). *Report of the World Commission on Environment and Development: Our common future*. Retrieved from www.un-documents.net/our-common-future.pdf
- United Nations. (2016). *System of Environmental-Economic Accounting (SEEA)*. Retrieved from <http://unstats.un.org/unsd/envaccounting/seea.asp>

RESIDENT INPUT AND MEGA-EVENT LEGACIES

Environmental concerns

Kyriaki Kaplanidou

In the past 15 years, the prominence of the terms *Green Games* and *environmental friendly Games* can be found in a number of media articles and coverage related to Olympic and Paralympic Games bidding, management, delivery, and legacy (Falt, 2006; IOC, 2014a). As Casper and Pfahl (2015) noted, sustainability and the environmental concern “are becoming a part of the strategic fabric of sport operations” (p. 11). Indeed, looking at the International Olympic Committee’s (IOC) factsheet about sport and the environment, concerted efforts have been made to increase attention to this matter in order to integrate it with strategic planning associated with event impacts and legacies (IOC, 2014a). The importance of protecting the environment was reflected in its incorporation in the Olympic Charter in 1996 (IOC, 2014a). The main idea of this inclusion was to encourage support of and create concern about issues related to the environment of Olympic Games host cities, which would have to start paying attention to sustainable development. According to VanWynsberghe (2015), the working definition of sustainability includes three spheres (i.e., economic, social, and environmental) and describes how to maximize positive impacts while reducing the negative ones. Sustainability efforts can relate to goals set by sport event bid committees in order to achieve certain policy objectives. Within the sustainability umbrella, environmental program interventions are one of the ambitious goals bid committees create in order to surpass previous host cities’ environmental plans and goals and put their own mark in the Olympic Movement (Pentifallo & VanWynsberghe, 2012).

Since 1996, a variety of ideas and initiatives have been adopted by host cities. For example, in the 2004 Athens Games in Greece, concentrated efforts to protect the environment involved the adoption of environmental friendly vehicles, metro expansion that limited pollution, and much needed greenery, which was planted around the city (IOC, 2014a). Most strikingly, in Turin, Italy, efforts were concentrated to create awareness about climate change (IOC, 2014a), and in Beijing, China, energy-saving building materials were used along with extended forestation efforts (IOC, 2014a). Notably, the IOC signed a sustainability agreement with the International Union for Conservation of Nature on April 13, 2016, to support Candidate Cities on issues related to sustainability and conservation (IOC, 2016). In studies such as the Olympic Games Impact study (OGI) there are specific environmental metrics such as air measurement which captures indicators such as air quality, greenhouse gas emissions, and greenhouse gas emissions from the Olympic Games (VanWynsberghe, 2015). But other OGI indicators capture land use changes, open air leisure areas, transport networks, traffic congestion, and protected sites (VanWynsberghe, 2015).

All the efforts of the organizing committees that focus on the environment can result in some changes for host cities' residents' quality of life, who observe the event preparations for the seven years they last (Kaplanidou, 2012). In recent research, the importance of residents' support of the event preparations has been critical as we have witnessed future bid cities for the Olympic Games vote in referendums to decline hosting the Games in their city (Press Association, 2015). At the same time, controversy about existing host cities' environmental planning has residents, activists, and sport enthusiasts in disagreement about benefits mega-events bring to a region (Watts, 2015). In the latest edition of the Games in Rio, the return of the sport of golf has created intense reactions from environmentalists who opposed the new Olympic golf course construction and were in support of using existing golf courses to conserve natural resources in Rio (Watts, 2015). Other concerns with Rio relate to the quality of water for sailing, rowing, and canoe events. These issues represent major challenges for the organizing committee and the residents, who were expecting some benefits from the environmental improvements of the Rodrigo de Freitas lake and the Marina da Glória ("New Sewage System," 2015). Although some efforts are being undertaken by using EcoBoats to pick up garbage, residents and athletes have some major concerns about these events and the overall water quality after the Games are over (Ford, 2016).

Current literature on Olympic Games, sustainability, and the environment

To reflect the IOC's commitment toward environment sustainability, they created Agenda 2020 (IOC, 2014b). In this strategic document, the IOC explicitly provides three recommendations for future Olympic host cities that include the environment as one of the sustainability spheres. Specifically, the IOC said that it would take "a more proactive position and leadership role with regard to sustainability and ensure that it is included in all aspects of the planning and staging of the Olympic Games" (IOC, 2014b, p. 13). The specific goals recommended by the IOC were as follows:

- 1 Develop a sustainability strategy to enable potential and actual Olympic Games organisers to integrate and implement sustainability measures that encompass economic, social and environmental spheres in all stages of their project.
- 2 Assist newly elected Organising Committees to establish the best possible governance for the integration of sustainability throughout the organisation.
- 3 The IOC to ensure post-Games monitoring of the Games legacy with the support of the NOC and external organisations such as the World Union of Olympic Cities (UMVO). (IOC, 2014b, p. 13)

In the aforementioned goals, it can be observed that the sustainability goals set by the IOC are quite wide and cast a larger net toward a number of initiatives. As more guidelines are embedded in Agenda 2020, the IOC has strategized about ways to reduce carbon emissions and travel impacts on the environment.

As the support for the Games from residents is crucial, the notion of social exchange theory (Emerson, 1976) comes into consideration. Residents usually support an event if they observe benefits from it, and they remove their support if they see the event has brought no benefits or negative benefits. As Jin, Zhang, Ma, and Connaughton (2011) found, a critical component to maintain support toward green initiatives among host city residents is the increase in positive attitudes for green issues. But most recently, Hollins (2013) found that for the London Games,

residents' attitudes toward environmental issues from the Games were influenced by the distance their residence had to the venues. Karadakis and Kaplanidou (2012) found that for the host city residents of Vancouver, the environmental efforts of the organizing committee and the city were quite important for their quality of life; however, evaluation of the environmental changes and improvements were not as satisfactory for the residents' quality of life. This finding suggests that although pro-environment strategies might be promoted as a means of political discussion and discourse, their impact on residents are more questionable. Prayag, Hosany, Nunkoo, and Alders (2013) found that positive environmental impacts enhance support toward the event and negative environmental impacts reduce attitudes toward supporting the event.

Residents' attitudes toward the environment legacies of Games

The topic of sustainability and environmental improvements has been promoted by Olympic Games bids such as London and Beijing (Jin et al., 2011; Prayag et al., 2013). The planning of the Games can target and integrate environmental outcomes such as conservation of green areas and attitudinal changes toward environmental protection (Kaplanidou, 2012). Often however, it is not clear how residents feel about the environmental interventions the Olympic Games can bring. In light of this issue, the remainder of this chapter will focus on residents' attitudes toward certain environmental issues in three Olympic cities: Sydney (2000), Athens (2004), and Beijing (2008). This study was part of a research project conducted in 2010 that aimed to examine long-term legacies of past Olympic host cities (Kaplanidou, 2010).

Environmental legacies

Many of the environmental legacies that took place in Olympic Games host cities focused on activities, programs, and infrastructure that aimed to create and promote sustainable (environmentally friendly) practices. For example, Beijing invested about ¥140 billion (US\$21.3 billion) for air quality improvements, and Sydney restored degraded land and Athens boosted its green spaces (IOC, 2010, 2014a). Specific environmental outcomes were noted in the IOC Official Final Reports of the Olympic Games for the cities of Sydney, Athens, and Beijing, where it was observed that each city had a slightly different approach on environmental initiatives (Kaplanidou, 2011).

Karamichas (2012) discussed the extent to which the Athens Games failed to really make environmental improvements, but he claims that one of the main benefits for environmental and ecological modernization of Olympic host cities resided in the idea of increasing the level of environmental conscientiousness in host city residents. Karamichas also reviewed the London 2012 and Rio de Janeiro 2016 environmental plans and indicated that London had the most competent plan that pushed governance reforms to protect the environment. Karamichas, however, questioned if there was a real environmental legacy in London. For Rio 2016, Karamichas argued that environmental education was at the core of the bid with projects aiming to educate and engage the public and officials into managing environmental conservation. Still, though, environmental concerns tangible to the event delivery such as waste management and contamination of the rowing and sailing sport venues remain (Ford, 2016). Liu, Broom, and Wilson (2014) examined Beijing legacies among non-host city residents and found that perceptions about environmental legacy – defined as attitudes and awareness about green issues – were the lowest in terms of significance ranking compared to identity and culture, psychic income, and social capital legacies. The results by Liu et al. in combination with the findings of Miles (2014) suggest that the Olympic Games legacies in China were more about a shift in way of thinking and being.

Empirical data from host city residents on the importance of environmental legacies

As part of a larger project (i.e., Kaplanidou, 2012), residents from four host cities were asked in the year 2010 (through the use of online, telephone, and face-to-face surveys) how important certain environmental changes promoted by the organizing committees in each host city were for their quality of life. In general, the residents of Athens, Sydney, and Beijing deemed environmental outcomes moderately to very important for their quality of life. With regard to air pollution, which was a very tangible problem in Beijing and Athens, the Beijing respondents reported that reducing pollution was very important for their quality of life, and Athens respondents indicated it was between moderately and very important for their quality of life. Specific environmental practices such as wastewater management, environmental improvements, and more green areas for use by locals were mostly relevant to Beijing environmental program and were rated by Beijing respondents as very important for their quality of life. Thinking of these results in terms of proximity of the event to the time of data collection for this project, the results showed that residents of the city of Beijing (who experienced the event most recently compared to other cities when they provided their opinions for this research project – two years away from the completion of the event) had higher environmental attitudes and behavioral changes than residents from Sydney and Athens.

Another issue of relevance regarding the environment was the education of people about environmental issues. This initiative of creating awareness was mostly implemented in Sydney and Beijing, where awareness of environmental issues was rated between moderately and very important for their quality of life by Sydney and Beijing residents. Similarly, creating eco-friendly buildings was important to Sydney and Beijing, as these interventions were rated as very important for Sydney residents and between moderately and very important for Beijing respondents.

Other environmental initiatives taken by Beijing organizers related to eco-friendly transportation and recycling programs and were rated by Beijing residents as very important, whereas energy-efficient building guidelines were rated between moderately and very important for Beijing residents' quality of life.

Another environmental initiative related to Olympic host cities related to improving degraded land and conserving resources. Specifically, restoring degraded land, conserving energy, and creating environmentally friendly lifestyles were very important legacy outcomes for Sydney residents' quality of life, whereas urban water recycling was rated between moderately and very important for their quality of life.

For the Athens Games, environmental improvements to an area called Schinias, where the venue for rowing was constructed, was an important legacy outcome for the Athens respondents. Specifically, the latter intervention was rated between moderately and very important for Athens residents' quality of life. Table 17.1, adapted from Kaplanidou (2010), shows the mean scores residents of Beijing, Sydney, and Athens provided on certain questions pertaining to their cities.

In the same research project (i.e., Kaplanidou, 2010), there were questions about relevant environmental friendly behaviors such as recycling. For recycling behaviors, Beijing residents indicated that after the Games they recycled more compared to Sydney and Athens.

Taking into consideration that Beijing's Olympic Games had as one of their goals to benefit their environment and atmospheric pollution problems from hosting the Games, it was perhaps more important for the people in Beijing to see some changes in this area. Thus, if the environmental problems of a host city are relevant for the quality of life of the local people and they

Table 17.1 Perceived environmental legacies among three Summer host cities' residents

Environmental Concerns	Sydney			Athens			Beijing		
	M	SD	N	M	SD	N	M	SD	N
Programs for reduction of atmospheric pollution	–	–	–	3.63	1.38	143	3.99	1.03	202
Waste water management programs	–	–	–	–	–	–	3.95	1.09	203
Environmental improvement of areas in Beijing	–	–	–	–	–	–	4.10	0.97	204
More green areas to use	–	–	–	–	–	–	4.00	1.03	201
More awareness about environmental issues	3.97	0.99	148	–	–	–	3.83	0.98	203
Eco efficient and eco-friendly buildings	3.90	1.03	152	–	–	–	3.74	1.04	203
Eco-friendly public transportation	–	–	–	–	–	–	3.99	0.97	203
Recycling programs	–	–	–	–	–	–	3.92	1.02	203
New energy efficient building design guidelines	–	–	–	–	–	–	3.67	0.93	203
Restoration of degraded land	4.02	0.92	167	–	–	–	–	–	–
Energy conservation	3.96	0.94	148	–	–	–	–	–	–
Environmental friendly lifestyle	3.91	1.03	149	–	–	–	–	–	–
Urban water recycling system	3.67	1.04	135	–	–	–	–	–	–
Environmental improvements of some areas in Attiki	–	–	–	4.15	1.08	168	–	–	–
Environmental improvements in Schinias area	–	–	–	3.89	1.15	181	–	–	–

Note. Mean scores were calculated on a scale from 1 to 5 (1 = not important at all, 2 = slightly important, 3 = moderately important, 4 = very important, and 5 = extremely important). M = mean; SD = standard deviation. – = outcome was not discussed extensively in the IOC Official Final report of the Olympic Games for the pertinent host city. Adapted from “Examining the Importance of Olympic Games Legacy Aspects Among Host City Residents: A Temporal Approach” by K. Kaplanidou, 2010, Technical report submitted to IOC, p. 53.

are integrated in the planning of the Olympic Games Organizing Committee, there are signs for positive outcomes in residents' quality of life. Taken together, the environmental interventions have to integrate with the local life and local problems to create a long-term sustainable outcome for the people of the Olympic host city.

Discussion

The purpose of this chapter was to provide an overview of key studies related to the Olympic Games environmental legacy plans and provide empirical data about past host cities' residents' perceptions of the importance of these legacies for their quality of life. As it can be observed from the initial empirical resident data provided in the previous section, the insights we draw from the reactions of the residents indicate that residents value environmental interventions for their quality of life. They also relate these interventions to the legacy of the event. However, the types of environmental interventions vary with each city, usually based on the level of preparation, planning, and goal setting (Karamichas, 2012). In addition, and as proposed by Karadakis, Kaplanidou, and Karlis (2010) many times, environmental interventions are perceived as a threat to the organization of the mega-event given the potential for negative impacts related to pollution and landscape changes from construction and other infrastructure projects.

The main environmental outcomes related primarily to changing the state of mind of local host city residents and providing a basis for further development related to the planning and execution of environmental legacies. As noted in the literature, the tipping point toward the actualization of environmental legacies involves attitude changes toward issues related to the environment and also higher efforts for awareness about these issues among the host residents

(Jin et al., 2011). It is also evident that the environmental legacies are being promoted by event organizers with often ambitious goals for environmental interventions (Pentifallo & VanWynsberghe, 2012; VanWynsberghe, 2015). Thus, environmental aspects become part of a bigger discourse that the organizers promote during the bidding and hosting of the Games, and when it comes to residents' perceptions of their importance for quality of life, residents rank them lower compared to other legacies pursued from the event hosting (Jin et al., 2011; Kaplanidou, 2010; Liu et al., 2014). In that sense, and given the overall premise of social exchange theory, there has to be a platform that will make environmental legacies directly relevant to the residents to elicit favorable support behaviors toward environment programs and initiatives. One potential platform is educational programs, which can be used to create attitude changes and connections to quality of life of residents (Kaplanidou et al., 2013; Prayag et al., 2013).

As cities that plan to host the Games set goals during the bidding stage, it is pertinent to discuss some points that Gold and Gold (2013) raised in their article about Olympic host cities and the sustainability agenda. In particular, they argue that the

transition from pre to post Games conditions was always likely to be challenging . . . Such changes, with associated uncertainties over finance and political will complicate the already difficult business of translating visions into reality and delivering the Legacy promise.

(Gold & Gold, 2013, p. 3538)

It can be observed that although there could be good will in the bidding files and the plans of the organizing committees, uncontrollable factors can change environmental legacy plans. Thus, targeting attitude changes about environmental issues could be the more tangible and realistic goal; furthermore, from the data offered earlier, it seems that such targets can be more feasible to accomplish. Such outcomes can be measured by creating a permanent independent organization that oversees public opinion surveys on related issues to the Games. This organization would measure attitudes during the bid stage, during the event hosting, and after the event. This idea of systematic research is alluded to by Tomlinson (2014), who suggested longitudinal research to capture the gap between planned and realized legacies for host cities. In addition, and as Chapelet (2008) emphasized, the distinction between Winter and Summer Olympic Games can provide a different approach to the environmental legacy. As Karadakis and Kaplanidou (2012) found for the 2010 Winter Vancouver Olympic Games, environmental legacies remained important before, during, and after the Games for both the host city residents and the non-host city residents. In addition, Pentifallo and VanWynsberghe (2012) noted that bid organizing committees for the Winter Games tended to propose more innovations and sustainability programming, starting with the Turin 2006 Winter Olympic Games and continuing to the Vancouver 2010 and Sochi 2014 Games. Taken together, it is important to conclude with the idea that planning for environmental interventions in host cities has to relate to local residents' quality of life if plans are to be successful and supported for the long term.

With the mind-set that planning is important and legacies have to be connected with the quality of life of residents, practical implications can relate a specific sequence of steps that accomplish long-term environmental legacies for residents. For example, introducing policy change related to specific environmental outcomes planned for the Games such as wastewater management from the influx of athletes and official during Games time can be implemented widely in city areas that need such an intervention. In addition, specific long-term policies about land conservation and improvements can assist with planning of such legacies at the community

level. These are some examples of how directly impactful outcomes for host communities can be planned to apply to a wide number of communities to benefit overall quality of life. Of course, the alignment of funding mechanisms with such initiatives can still be a challenge, but if it is incorporated from the beginning of the idea to bid for an event, then these problems may not surface in the first place.

References

- Casper, J., & Pfahl, M. (Eds.). (2015). *Sport management and the natural environment: Theory and practice*. London: Taylor & Francis.
- Chappelet, J.-L. (2008). Olympic environmental concerns as a legacy of the Winter Games. *International Journal of the History of Sport*, 25, 1884–1902.
- Emerson, R. M. (1976). Social exchange theory. *Annual Review of Sociology*, 2, 335–362.
- Falt, E. (2006). Guest editorial: Sport and the environment. *Environmental Health Perspectives*, 114, A268–A269.
- Ford, B. D. (2016). 2016 Rio Olympic Games: The promise Rio couldn't keep. *ESPN*. Retrieved from http://espn.go.com/espn/feature/story/_/id/14791849/trash-contamination-continue-pollute-olympic-training-competition-sites-rio-de-janeiro
- Gold, R. J., & Gold, M. M. (2013). “Bring it under the legacy umbrella”: Olympic host cities and the changing fortunes of the sustainability agenda. *Sustainability*, 5, 3526–3542.
- Hollins, S. F. S. (2013). *The intersections between economy, environment and locality: The London 2012 Olympic and Paralympic Games* (Unpublished doctoral thesis). University of Central Lancashire, Preston, UK.
- IOC. (2010). *Factsheet: Legacies of the games*. Lausanne: International Olympic Committee.
- IOC. (2014a). *Factsheet: The environment and sustainable development update*. Lausanne: International Olympic Committee.
- IOC. (2014b). *Olympic agenda 2020, 20+20 recommendations*. Lausanne: International Olympic Committee.
- IOC. (2016). *IOC signs sustainability agreement with International Union for Conservation of Nature*. Retrieved from www.olympic.org/news/ioc-signs-sustainability-agreement-with-international-union-for-conservation-of-nature/249019
- Jin, L., Zhang, J. J., Ma, X., & Connaughton, D. P. (2011). Residents' perceptions of environmental impacts of the 2008 Beijing green Olympic Games. *European Sport Management Quarterly*, 11, 275–300.
- Kaplanidou, K. (2010). *Examining the importance of Olympic games legacy aspects among host city residents: A temporal approach*. Gainesville, FL: Submitted to the International Olympic Committee.
- Kaplanidou, K. (2011). Olympic research corner: A question of legacy. *Olympic Review*, 79, 64–67.
- Kaplanidou, K. (2012). The importance of legacy outcomes for Olympic Games for summer host cities residents' quality of life: 1996–2008. *European Sport Management Quarterly*, 12, 397–433.
- Kaplanidou, K., Karadakis, K., Gibson, H., Thapa, B., Walker, M., Geldenhuys, S., & Coetzee, W. (2013). Quality of life, event impacts, and mega-event support among South African residents before and after the 2010 FIFA World Cup. *Journal of Travel Research*, 52, 631–645.
- Karadakis, K., & Kaplanidou, K. (2012). Legacy perceptions among host and non-host Olympic Games residents: A longitudinal study of the 2010 Vancouver Olympic Games. *European Sport Management Quarterly*, 12, 243–264.
- Karadakis, K., Kaplanidou, K., & Karlis, G. (2010). Event leveraging of mega sport events: A SWOT analysis approach. *International Journal of Event and Festival Management*, 1, 170–185.
- Karamichas, J. (2012). The Olympics and the environment. In H. J. Lenskyj & S. Wagg (Eds.), *The Palgrave handbook of Olympic studies* (pp. 381–393). London: Palgrave Macmillan.
- Liu, D., Broom, D., & Wilson, R. (2014). Legacy of the Beijing Olympic Games: A non-host city perspective. *European Sport Management Quarterly*, 14, 485–502.
- Miles, S. (2014). The Beijing Olympics: Complicit consumerism and the re-invention of citizenship. *Contemporary Social Science*, 9, 159–172.

- New sewage system to tackle Rio 2016's water problems. (2015, September 2). *Al Jazeera*. Retrieved from www.aljazeera.com/news/2015/09/sewage-system-solve-rio-2016-water-problems-150902104344136.html
- Pentifallo, C., & VanWynsberghe, R. (2012). Blame it on Rio: Isomorphism, environmental protection and sustainability in the Olympic Movement. *International Journal of Sport Policy and Politics*, 4, 427–446.
- Prayag, G., Hosany, S., Nunkoo, R., & Alders, T. (2013). London residents' support for the 2012 Olympic Games: The mediating effect of overall attitude. *Tourism Management*, 36, 629–640.
- Press Association. (2015, November 29). Hamburg referendum votes against bidding to host 2024 Olympic Games. *The Guardian*. Retrieved from www.theguardian.com/sport/2015/nov/29/hamburg-votes-2024-olympics
- Tomlinson, A. (2014). Olympic legacies: Recurrent rhetoric and harsh realities. *Contemporary Social Science*, 9, 137–158.
- VanWynsberghe, R. (2015). The Olympic Games Impact (OGI) study for the 2010 Winter Olympic Games: Strategies for evaluating sport mega-events' contribution to sustainability. *International Journal of Sport Policy and Politics*, 7, 1–18.
- Watts, J. (2015, July 19). Rio 2016: "The Olympics has destroyed my home." *The Guardian*. Retrieved March 20, 2016, from www.theguardian.com/world/2015/jul/19/2016-olympics-rio-de-janeiro-brazil-destruction

THIRD-PARTY ASSURANCE OF SUSTAINABILITY REPORTING

The case of the London 2012 Olympic and Paralympic Games

Eleni Theodoraki

The purpose of this chapter is to discuss third-party assurance of sustainability reporting in the case of the London 2012 Olympic and Paralympic Games (Games). The production of sustainability reports has been evidenced in the last two decades (ACCA, 2004), and similar reports were produced by London 2012 Games organizers involved with Games preparations and hosting. As someone involved in the third-party assurance framework for this event, and as an academic with a research interest in the topic of mega-sport event management, I discuss the origins of the concept of sustainable development, what purposes assurance serves, and how it links to measurements of organizational effectiveness. I then consider the Aristotelian concept of phronesis recently revisited by Flyvbjerg (2005) to ask whether Games-related developments around the world could be deemed sustainable from a phronetic perspective. Additionally, I build upon Elinor Ostrom's (2009a, 2009b) Nobel Prize-winning work on governance of common pool resources and her ideas on polycentric approaches for managing conflicting interests to explore its potential for informing sustainability reporting and then sustainability assurance of the Games. Gaps in sustainability reporting inadvertently affect sustainability assurance that follows. Therefore, I explore the limitations of reporting around the sustainability of the Games that also shaped the boundaries of sustainability assurance. Considering the plurality of stakeholders, I illustrate the complexity of first understanding and then assuring sustainability in this particular context. I draw upon my experience of working for the Commission for a Sustainable London (CSL) between February 2010 and February 2013 and my membership in the expert group advising the Games' Global Impacts program's evaluation of the Vancouver 2010 Winter Games. I use the sustainability reports produced by Games planners and organizers, namely the Olympic Delivery Authority and the Organising Committee for the London Olympic Games, to name the reporting indicators used in them and compare them to the Global Reporting Initiative indicators, identifying any gaps in reporting. I then explore CSL publications to illustrate what assurance frameworks were used, which aspects of sustainability the commission considered, the *modus operandi* of Games organizers, and ultimately, the difference the commission thought it made and what its independent evaluators thought of its impact. Although I was part of the CSL, I acknowledge the limitations of my viewpoints and seek to adopt a critical stance to review the practices I was part of and those I observed.

My perspectives reported here are affected by my academic background, which includes conducting research on how impacts of the OGs are affected by communication efforts of organizing committees for the Games (Theodoraki, 2009). My background as a member of the expert group advising on sport policy development also affects the questions I seek to answer in this chapter. Specifically, I believe that research in mega-events should follow the principle of *phronesis* as proclaimed by Aristotle (2009) and applied to the study of mega-events by Flyvbjerg (2005) by seeking to reveal who wins and who loses from developments. In a recent *Transparency International* publication, I explained some of the concerns I have over the ways in which mega sport event impact assessments are conducted and the inherent challenges of capturing multi-dimensional, multi-temporal, and multi-spatial impacts that differ depending on the motivations and perspectives of the various stakeholders under consideration (Theodoraki, 2015). The central issue of ownership/boundary setting of impact is considered along with the problem of impact assessors'/assurance providers' selectivity. The latter predominately tends to focus on the host city/host organizing committee and its environment rather than on the event owner (e.g., International Olympic Committee; IOC) or associated entities like the National Olympic Committees and sponsor organizations. When Games organizers define the boundaries of their impacts prior to sustainability reporting, they affect what impact is included as owned, associated, or not related to the Games according to their viewpoints. Thankfully, some guidance exists in the sustainability reporting literature on setting the boundaries for reporting, and this chapter will explore any gaps that Games sustainability reporting and sustainability assurance left out. In retrospect, the chapter is a polemic against claims of accuracy of third-party sustainability assurance in the case of the London Games as a mega-event. I argue that the limited scope of the sustainability reporting did not capture the multi-dimensional, multi-temporal, and multi-spatial impacts of the Games. By default, third party-sustainability assurance that followed reporting was unable to adequately consider Games sustainability overall in order to then proclaim the reporting accurate or the Games sustainable or not sustainable.

Sustainability and assurance

After the 1987 Brundtland Commission defined sustainable development, the United Kingdom government, like other governments around the world, confirmed that “in order for the UK to become more sustainable, it is important to have an agreed set of principles that can be used as a basis for coordinated national policies, strategies and action plans” (Sustainable Development Commission, 2005a, para. 1). The main principles of living within environmental limits and ensuring a strong, health and just society were outlined in the *One Future – Different Paths: The UK’s Shared Framework for Sustainable Development* publication (DEFRA, 2005). These were supported by the principles of achieving a sustainable economy, using sound science responsibly, and promoting good governance, and all of these were developed and agreed upon by the Sustainable Development Commission and the devolved governments in the UK nations (Sustainable Development Commission, 2005b). Although definitions of frameworks and guiding principles may appear straightforward on paper, their application in real life is complex and challenging. This framework applies to government (and one would expect the public sector and publicly funded bodies more widely), but the question arises on which framework and what guiding principles are in place for private and non-profit sector organizations? It is pertinent to ask whose job it is to assess performance against the guiding principles and what roles do experts, politicians, civil servants, auditing houses, and academics play in evaluating performance against the framework and its principles.

Practices of sustainability reporting in corporate environments have manifested since approximately 1997 when the Global Reporting Initiative (GRI) was created and its guidelines started being used for reporting. According to GRI (2016a) “of the world’s largest 250 corporations, 93% report on their sustainability performance and 82% of these, use GRI’s Standards to do so” (para. 3). Following reporting, some, but not all, organizations pursue external or third-party assurance as a means of validating the claims made. Such assurance may be seen as a way to increase confidence in the quality and accuracy of contents of the sustainability report. Given the fact that reports are authored by members of the organization whose sustainability is under investigation or by paid consultants/contractors, checks on impartiality are sought. Via external assurance organizations can claim legitimacy and make it “more likely that the data will be relied on and used for decision making” (GRI, 2013, p. 5). Given that quality, accuracy, external validity, and legitimacy are the reason why we have assurance, it is relevant to next explore what third-party assurance looks like. To understand assurance as an idea and as a process, Zadek and Raynard (2004) advise that we consider some questions organizations can pose to themselves in the assurance context. Namely, where does the appetite come from, what are the standards and levels of inquiry used in the assurance methodology, what is the scope and breadth of assurance, and finally, who are the providers of assurance and what are their competencies?

They add that:

Assurance is an evaluation method that uses a specified set of principles and standards to assess the quality of an organization’s subject matter and the underlying systems, processes and competencies that underpin its performance. Assurance includes the communication of the results of this evaluation to give the subject matter credibility for its users. Auditing, verification and validation are some of the tools and processes by which assurance is obtained. Various organizations (audit firms, NGOs, quality assurance consultants) and individuals (opinion leaders) provide assurance. Assurance often is assumed to apply only to a company’s published reports, but it applies equally to the assurance of the company’s underlying systems and processes, as well as its products, services and governance.

(Zadek & Raynard, 2004, p. 7)

Despite the intentions of the authors of the GRI guidelines, however, and regardless of the checks applied to assurance processes, Perego and Kolk (2012) found:

evidence [which] suggests that currently several [multinationals] project a decoupled or symbolic image of accountability though sustainability assurance, thereby undermining the credibility of this verification practice. The proliferation and opacity of [international accountability standards] creates dilemmas for managers who must decide the appropriate level of conformity and inherent sustainability assurance levels.

(p. 174)

It is interesting to note that the task of sustainability assurers is highlighted in Zadek and Raynard (2004) earlier as one of assessing the quality of an organization’s subject matter and the underlying systems, processes, and competencies that underpin its performance. Talk of quality in what an organization does, of the systems employed, and of performance in its many forms is similar to the language of organizational effectiveness that encourages researchers to consider the multidimensional nature of the concept of effectiveness. That is, researchers should be reminded that effectiveness can be about return on financial investment and/or meeting less

tangible targets: that the many stakeholders that make up an organization may actually have different interests and priorities, hold different perspectives on what measures of effectiveness can be employed, and hold numerous opinions on how effective the organization actually is and on its overall performance or the component parts that constitute it. Additionally, in some cases, stakeholder interests can be conflicting and, likewise, an organization may have conflicting goals for which the success of one goal may actually undermine the success of the organization in another. One such example for organizations like organizing committees for the Olympic Games is the pursuit of Games time efficient delivery of the event via venues tailored to the event requirements and planning for longer-term legacy requirements for the same venue's long-term post-Games use. By constitution, and in line with the host city contract signed by the city and the event owner, the host Games organizers are fundamentally tasked with the former, and legacy work – although included – is a peripheral concern. Nevertheless, the Games legacy as a whole will be judged post-event on the delivery of the latter, which arguably is the reason the event bid was placed in the first place. On an additional twist, competencies that underpin performance may be delivered to varied levels of success in various chronological audit periods depending on the timing of taking the measurement. For example, host country national pride, as an indicator of event performance, will be significantly higher in the days after a string of success on the medals' table. Similarly, levels of community satisfaction within the various geographies within which the event is delivered and experienced may differ. Some regions will see greater benefit from transport investment, for example, whereas others may see declined investment because of prioritization of development projects in Olympic Games host areas.

In line with the multiple constituent models of effectiveness discussed in the literature (Slack & Parent, 2006), effectiveness for some stakeholders may be about achieving goals. For others, it may be about being able to secure resources in order to operate and the efficient processing of inputs, into throughputs and then outputs, and about serving the interests of main stakeholders and some level of satisfaction of all strategic constituents. Aristotle (2009) presented the virtue of phronesis (in addition to the virtues of episteme-science and techne-art) as “a true and reasoned state of capacity to act with regard to the things that are good or bad for man” (Nicomachean Ethics VI. 5). Flyvbjerg, Landman, and Schram (2012) define phronesis as the “intellectual virtue of reason capable of action” (p. 287), and Flyvbjerg (2005, 2007) uses the concept to define the winners and losers from mega-sport event-related development. Building on their views, I argue that sustainability questions need to be answered in light of the concept of phronesis and ask whether the Games are good or bad for hosts and other stakeholders. In considering the extensive range of Games-related development projects, I propose that we need to explore whether sustainability reports consider both winners and losers from the use of resources while conducting their sustainability audits. Likewise, sustainability assurers may be informed by ethical questions, and the frameworks they apply could consider Aristotle's writings on the virtue of phronesis. Proponents of phronetic research explore the use of this virtue in research on event-led development projects (Flyvbjerg, 2005, 2007). By extension, I argue that phronetic research has a place in the evaluation of sustainability reporting of the Games, which use many common resources like taxpayers' money, water, wood, etc. In line with calls for phronetic research in mega sport event hosting, I call upon researchers to explore who wins and who loses from the use of human, financial, physical, and intangible resources that are needed for Games-related developments to take place (e.g., venue and transport infrastructure development).

An understanding of winners and losers echoes the GRI principles for defining a sustainability report's content and quality. The former stipulates that the information in a report should

cover topics and indicators that reflect the organization's significant impacts, should identify its stakeholders, present the organization's performance in the wider context of sustainability, and offer as complete and full picture as possible to allow stakeholders and interested parties to assess the organization's performance (GRI, 2016b).

The latter criterion of the report's quality requires that it should be balanced and explore both the positives and negative aspects of performance. Additionally, it should be presented in a comparable manner that could support analysis relative to other organizations and be sufficiently accurate and detailed. This reporting criterion requires timely regular schedule of reporting, with clarity and reliability and disclosed in a manner that can be subject to examination (GRI, 2016b). A final GRI stipulation relates to the report's boundary and asks that the report include actual and potential impacts of all entities where there is some control or influence.

In 2011, the UK government acted on embedding sustainability as part of its commitment to be the greenest government ever. The Greening Government Commitments document identified goals for public-sector departments to address their carbon emissions, water use, waste, and supply chain impacts (DEFRA, 2012). It requires reporting on how sustainability is embedded and on performance to include the economic, social, and environmental impacts that are most material to the organization and how they relate to policy, procurement, and operations (HM Treasury, 2013). The same documents specified that:

[w]hilst external assurance and verification of reported figures will not be required for 2015–2016 sustainability reporting, it is important that all organisations have relevant audit or scrutiny arrangements to ensure that the correct procedures are in place to produce robust data on performance.

(HM Treasury, 2013, p. 13)

In light of such a government commitment, one could expect that any public-sector organizations involved with Games infrastructure development would undertake sustainability reporting. While preparing the Olympics bid, a commitment to sustainable development was made in the form of the concept of a One Planet Olympics. According to Bioregional (2005), who co-authored it with the Olympics Bid committee and WWF, this commitment provides the:

critical "implementation" link between the aspirations of Agenda 21 and the analysis and benchmarking facilitated by the Olympic Games Global Impact (OGGI) project. We only have one planet; London 2012 will respect its ecological limits, its cultural diversity and create a legacy for sport, the environment and the local and global community.

(Bioregional, 2005, p. 3)

In a similar vein, the mission of the Olympic Delivery Authority (ODA) charged with delivering the venues, infrastructure, and legacy was to "deliver venues, facilities and infrastructure and transport on time and in a way that maximises the delivery of a sustainable legacy within the available budget" (ODA, 2007, p. 5).

The reference to our "one planet" and "its ecological limits" links to the conceptual framework of common pool resources where finite resources are threatened by depletion from over-use by one group in an ecosystem and this has detrimental effects on other users. The related concept of the tragedy of the commons explores the eventual dwindling of common resources which groups or individuals have an interest in maximizing use of in competition with other groups.

Ostrom, Gardner, and Walker's (1994) Nobel Prize-winning work on common pool resources (CPR) provides meaningful insights into the risks of uncontrolled resource use, and such an exploratory framework can illuminate conditions of resource use during Games planning and hosting. These can illuminate discussions on the balance of interests of Games stakeholders, the evaluation of sustainability claims, and, by extension, discussions on third-party sustainability assurance:

The temptation to over extract . . . resources units from a resource system shared with others occurs in many guises in resources systems throughout time and space . . . When individuals withdraw scarce resource units from the same CPR, when they cannot communicate [. . .] and when no other authority has established and enforced effective rules, predictions of suboptimal use of the resource are likely to be correct.

(Ostrom et al., 1994, p. 5)

In the case of the Games, host cities are legally bound to the IOC as event owner via the host city contract (Theodoraki, 2007) on keeping the promises that the bid committee made on the specifications of the games. Such promises affect the use of resources in the host environment. Nevertheless, the Declaration of Berlin signed by sport ministers in 2013 urged that we “[d]evelop a consistent policy setting out the conditions for planning and implementing major and mega sport events as well as for participating in related bidding procedures” (UNESCO, 2013, p. 8). Calls for consistency in planning and implementing have implications for consistency in sustainability reporting and assurance. It is therefore appropriate to explore the related practices exhibited by the main organizations behind the London Games.

To protect common pool resources from depletion in the context of mega sport event hosting we can consider the advice from Ostrom (2009a), who in her Nobel Prize lecture, argued that “simply allowing communication, or ‘cheap talk,’ enables participants to reduce overharvesting and increase joint payoffs, contrary to game-theoretical predictions” (p. 409). The idea of participants or stakeholders in an ecosystem discussing use of resources is obviously pertinent to sustainability reporting and assurance given their varied and sometimes divergent interests. Such a dialogue necessitates platforms for discussion and access to rich and extensive data that in the case of the Games would be available in sustainability reports.

The next section introduces and discusses practices in sustainability reporting and third-party sustainability assurance evidenced in the context of the London Games. My analysis illustrates areas of good and bad practice when as the GRI principles of report content and report quality are applied for comparison purposes. With reference to assurance, I use Zadek and Raynard's (2004) questions for understanding the context of assurance and any forces at play.

Reporting and assurance for the London Games

The London Organising Committee of the Olympic and Paralympic Games (LOCOG) was the organization responsible for overseeing the planning and development of the 2012 Summer Olympic and Paralympic Games. LOCOG helped develop the GRI events sector supplement and committed in its sustainability plan that “it. . . [would] develop [its] future sustainability reports to align with this new GRI reporting framework.” (LOCOG, 2009, p. 90).

On assurance, the sustainable development strategy published by the ODA (2007) made several promises:

The Commission for a Sustainable London 2012 will provide the external public assurance for the overall London 2012 sustainable development programme. The

assurance framework is currently under development, and the Commission will publish information on this framework in the spring of 2007. As a client, the ODA is also responsible for assuring its own sustainability performance and that of its supply chain. It will carry out or commission sustainability audits from time to time in order to assist with this internal assurance function.

(ODA, 2007, p. 58)

The ODA published annual reports and accounts each year from 2006 onwards. No GRI reporting is included in any of them, and in the 2011–2012 reports, about one page of data on greenhouse gas emission, water resources, and waste is included without any other adherence to complete data reporting. In the 2011–2012 report, the ODA listed several sustainability commitments, including renewable energy, carbon emissions, building code for the village, transport of construction material, reclaimed material, and use of recycled aggregate for infrastructure. Four of the five were exceeded. The commitment on renewable energy was not: “The target to deliver 20 per cent of all energy demands for the immediate post-Games legacy using on-site renewable resources . . . was not achieved as a major wind turbine could not be successfully deployed” (ODA, 2012).

In the publication of the final report for the ODA (DCMS, 2015) that covered all years of operation from 2006 to 2014, it was stated that the ODA has “taken advantage of the exemption from the requirement to produce a sustainability report, on the basis that during the period it had fewer than 250 staff and occupied less than 1,000m² of accommodation” (p. 9). It is regrettable that the ODA did not engage with full sustainability reporting at GRI level, as this would have allowed richer insights for local host stakeholders, event owners, and future Games organizers.

LOCOG also produced annual sustainability reports and engaged with GRI reporting protocols using all GRI indicators. Table 18.1 lists the eight sustainability categories and the number of performance indicators fully reported upon under each of the GRI themes out of the full number of indicators available. Notably, the extent of full reporting of indicators has increased significantly in the last year of reporting.

More than 10,500 athletes competed at the London OGs (IOC, 2013). Preparations had started long before the announcement of the winning bid in 2005, and at the time of publication

Table 18.1 Number of performance indicators in GRI sustainability themes fully reported in LOCOG annual reports vs. total available

	<i>Indicators Reported/Total in Category</i>		
	<i>April 2011</i>	<i>April 2012</i>	<i>December 2012</i>
Economic	5/9	7/10	8/10
Environmental	7/30	26/32	26/32
Labor practices and decent work	4/10	9/15	9/15
Human rights	1/8	10/11	10/11
Society	4/7	10/13	8/13
Product responsibility	4/8	6/11	6/11
Sourcing	N/A	1/2	1/2
Legacy	N/A	3/3	3/3

Notes. Indicators not included as “fully reported” include those with partial reporting, not available, not applicable, not considered material, or confidential. Source: LOCOG (2011, 2012a, 2012b).

of this chapter, real estate developments linked to the Olympic Park were still under way. In addition to the athletes, there were numerous media representatives, suppliers, volunteers, sponsors, and spectators transported across the city, accommodated, and provided with hospitality as applicable. Given the size of the event and the aforementioned £9.3 billion public-sector funding package, issues of sustainable development are rightly raised in relation to this event, and they also applied to earlier plans for development of the East Thames Gateway area that were pre-existent and independent of the event.

From the early stages of Games planning, the concept of sustainability was center stage. London Mayor Ken Livingstone outlined five legacy commitments for the OGs (Mayor of London, 2007). The fourth commitment, “delivering a sustainable Games and developing sustainable communities” (Mayor of London, 2007, p. 17), aimed to induce positive change at all stages of the Games. The Commission for a Sustainable London 2012 was then established to assure sustainability, and the primary objective was to protect against any notions of “greenwash.” The annual framework for assurance employed by the commission was created by PricewaterhouseCoopers LLP, in conjunction with the Forum for the Future and their London Sustainability Exchange program along with input from other stakeholders (CSLondon, 2007). It was cyclical and started with reviews of the governance of the Games, evaluation of sustainable development issues, data gathering and analysis, and then reporting to the Olympic Board. The official role and purpose of the commission was to “provide independent assurance and commentary in order to enable the sustainability objectives of the London 2012 programme to be achieved and to support a sustainable legacy” (CSLondon, 2007, p. 1). CSL started work in 2006, one year after the bid was won in 2005. It included paid staff and had an expenditure of £2.1 million (CSLondon, 2013b). The CSL secretariat worked from London and its 12 commissioners met monthly, on average, to discuss departmental progress reports, plan, and sometimes receive presentations by the organizers. During planning and Games time, the CSL also undertook field inspections at numerous sites. Numerous recommendations were made by CSL and the majority of them were adopted by Games planners and organizers. Overall, CSL acted as a critical friend seeking to alert and inspire rather than antagonize them. This was a crucial element of the work of the commission, which allowed a collaborative spirit to be fostered even though the commission had a formal assurance role. In its final report, the CSL argued its:

assurance model can and should be applied to major projects and events if the sustainability agenda is to gain credibility and dismiss any notion of greenwash. By providing an independent professional service, all parties can use the Commission as a trusted critical friend and independent source of accurate information.

(CSLondon, 2013b, p. 68)

True to its word on the challenge of “greenwashing,” the commission clearly explained that Olympic Games (OGs) are, by design, unsustainable practices. Specifically, it stated that:

there is no such thing as a sustainable Olympic and Paralympic Games unless it is possible to demonstrate in some way that the resources used to stage the Games are in some way compensated for by more sustainable practices inspired by, or as a direct result of the Games.

(CSLondon, 2013a, p. 2)

It is the qualifying comment at the second part of this sentence that summarizes the conditions under which the London OGs could be called sustainable in the commission’s view. In its final

report, the commission carefully stated that it felt these conditions were eventually met: “On balance we believe there is sufficient evidence to conclude that sustainable practices inspired by London 2012 should out-weigh the inevitable negative impacts of the Games over time” (CSLondon, 2013a, p. 2). The independent evaluation of CSL by CAG Consultants (2013) commented on the stakeholders’ views that CSL added significant value to the London 2012 program (CAG Consultants (2013). They also noted that the “precise level of additionality brought by CSL [was] impossible to define retrospectively, particularly since there is no counterfactual against which [they] can compare the program” (p. 56). Reflecting on lessons for improvement, the consultants also highlighted the relative close proximity to the organizers as opposed to being more distant assessors and the lack of commonly agreed standards and principles for performing the assurance. Since London 2012, no other OGs have used a similar commission for third-party assurance purposes. Nevertheless, the Tokyo 2020 Games sustainability plan includes the creation and function of a similar commission that includes academics and experts, but it does not clearly exist to provide assurance as such (Tokyo 2020, 2016).

Discussion and conclusion

It is unquestionable in my view that the London Games planners and organizers have improved development practices in line with the sustainable development principles discussed at the start of the chapter. They have created and raised many sustainability-related standards and received many awards. Details of these can be found in their respective annual reports and are available among a wealth of other documents and case studies in a dedicated learning legacy website (i.e., www.learninglegacy.independent.gov.uk). CSL has also contributed significantly in improving Games planning and management processes via its assurance processes, challenging planners, and organizers to improve via their critical friend capacity and their related thematic and annual reporting. Its publications are also accessible electronically (i.e., www.csllondon.org/publications).

Nevertheless, the fact remains that ODA that was in charge of Games infrastructure and legacy did not produce any overall sustainability report or use GRI reporting for its eight years of operation from 2006–2014, and LOCOG did so for two (2011 and 2012b) of its seven years of operations between 2005 and 2012. Given the “one planet Olympics” promises made at the start of the Games bidding and planning process, it is regrettable that the Games organizers could not report on their full impacts on that one planet. That would have involved sustainability reporting that meets the GRI criteria mentioned earlier of quality and content, presenting complete performance in the wider context of sustainability, and including positive and negative aspects.

The concept of phronesis that Flyvbjerg, Bruzelius, and Rothengatter (2003) urge us to consider in the case of mega-events and the identification of winners and losers from developments does not appear to have guided the evaluation of the event. The DCMS (2013) meta-evaluation of the impacts and legacy of the Games does not include evidence of any negative impacts. As the report explains, its remit was in reviewing the successes “[of] [t]he [c]reation of a comprehensive evidence base that has enabled a robust assessment to be made of the success and impact of the Games in delivering a lasting legacy” (p. 5).

Regarding sustainability assurance of the Games, it is clear that CSL had considerable impact in improving sustainable development practices of Games planners and organizers via its recommendations. Had the evidence presented been more thorough and balanced to include negative impacts and all impacts of a wider range of stakeholders within a greater geographical and temporal boundary, I am confident that greater sustainable development outputs could have been achieved. My short analysis and reflection upon the commission’s work reveal no evidence

of what Zadek and Raynard (2004) describe as a symbolic image of accountability through sustainability assurance. Nevertheless, the assertion that practices inspired by the Games should outweigh negative impacts over time may be unfounded if the negative impacts are not clearly discussed or included in the reporting that is being assured.

The governance and ownership of risk from unsustainable mega sport event-related practices is an area ripe for research. On the same note it is important to explore how event owners like FIFA, the International Olympic Committee, and International Federations report on their sustainability in their respective jurisdictions and what differences, similarities, and trends can be observed in practices between them.

Horne and Whannel's (2012) critique that the CSL was a watchdog without much bite referred to the source of its funding and location of headquarters that gave it close proximity to those assured. Contrary to this claim, I argue that there is no evidence of clientelistic relations between the commission and those being assured. I nevertheless believe that given the multi-dimensional, multi-temporal, and multi-spatial impacts of the London 2012 Olympic Games, CSL focused on some aspects of what was relevant and not everything that it would need to conduct full assurance was available to it. A polycentric (Ostrom, 2009a) approach to Games sustainability assurance that elicits with equal fervor the voices of supporters and critics may be the only strong option at our disposal for supporting sustainable development and protecting any irreplaceable common pool resources that are spent in the hosting of the Games.

References

- ACCA. (2004). *Towards transparency: Progress on global sustainability reporting*. London: ACCA.
- Aristotle. (2009). *The Nicomachean ethics*. Oxford: Oxford University Press.
- Bioregional. (2005). *Towards a one planet Olympics*. Retrieved from www.bioregional.com/towards-a-one-planet-olympics/
- CAG Consultants. (2013). *Independent evaluation of the Commission for a sustainable London 2012*. London: CAG Consultants.
- CSLondon. (2007). *Assuring a legacy*. London: Commission for a Sustainable London 2012/London: City Hall.
- CSLondon. (2013a). *Beyond 2012 – outcomes report*. London: City Hall.
- CSLondon. (2013b). *Making a difference: Post-games report*. London: City Hall.
- DCMS. (2013). *Report 5: Post-games evaluation meta-evaluation of the impacts and legacy of the London 2012 Olympic Games and Paralympic Games*. London: DCMS.
- DCMS. (2015). *Olympic Delivery Authority 2006–2014 final report*. Retrieved from www.gov.uk/government/uploads/system/uploads/attachment_data/file/412429/ODA_AR_2014_-_Web_PDF.pdf
- DEFRA. (2005). *One future – different paths: The UK's shared framework for sustainable development*. London: Defra Publications.
- DEFRA. (2012). *The greening government commitments: Annual report on government departments' progress against 2015 targets in 2011–2012*. Retrieved from www.gov.uk/government/uploads/system/uploads/attachment_data/file/69624/pb13846-greening-government-commitments.pdf
- Flyvbjerg, B. (2005). Design by deception: The politics of megaproject approval. *Harvard Design Magazine*, 22.
- Flyvbjerg, B. (2007, September 26). *Truth and lies about megaprojects: Inaugural speech for professorship and chair at Faculty of Technology, Policy and Management of Delft University of Technology*. Retrieved from <http://flyvbjerg.plan.aau.dk/Publications2007/InauguralTUD21PRINT72dpi.pdf>
- Flyvbjerg, B., Bruzelius, N., & Rothengatter, W. (2003). *Megaprojects and risk: An anatomy of an ambition*. Cambridge: Cambridge University Press.
- Flyvbjerg, B., Landman, T., & Schram, S. (2012). Important next steps in phronetic social science. In B. Flyvbjerg, T. Landman, & S. Sanford Schram (Eds.), *Real social science: Applied phronesis* (pp. 285–297). Cambridge: Cambridge University Press.

- GRI. (2013). *The external assurance of sustainability reporting*. Retrieved from www.globalreporting.org/resource/library/GRI-Assurance.pdf
- GRI. (2016a). *GRI and sustainability reporting*. Retrieved from www.globalreporting.org/information/sustainability-reporting/Pages/gri-standards.aspx
- GRI. (2016b). *Event organizers sector supplement – Quick reference sheet*. Retrieved from www.globalreporting.org/resource/library/G3-1-English-Event-Organizers-Sector-Supplement-Quick-Reference-Sheet.pdf
- HM Treasury (2013). *Public sector annual reports: Sustainability reporting guidance for 2012–2013 reporting*. Retrieved from www.gov.uk/government/uploads/system/uploads/attachment_data/file/198267/Government_guidance_for_sustainability_and_environmental_reporting.pdf
- Horne, J., & Whannel, G. (2012). *Understanding the Olympics*. Oxon: Routledge.
- IOC. (2013). *London 2012 facts and figures*. Retrieved from https://stillmed.olympic.org/media/Document%20Library/OlympicOrg/Games/Summer-Games/Games-London-2012-Olympic-Games/Facts-and-Figures/Factsheet-Facts-and-Figures-London-2012.pdf#_ga=1.86045277.431418825.1462995146
- LOCOG. (2009). *Towards a one planet 2012 sustainability plan* (2nd ed.). Retrieved from <http://learninglegacy.independent.gov.uk/documents/pdfs/sustainability/1-cp-london-2012-sustainability-plan-2nd-edition.pdf>
- LOCOG. (2011). *London 2012 sustainability report: A blueprint for change*. Retrieved from <http://learninglegacy.independent.gov.uk/documents/pdfs/sustainability/2-london-2012-sustainability-report-a-blueprint-for-change.pdf>
- LOCOG. (2012a). *Pre-games sustainability report*. Retrieved from <http://learninglegacy.independent.gov.uk/documents/pdfs/sustainability/4-london-2012-sustainability-summary-report-neutral.pdf>
- LOCOG. (2012b). *London 2012 post games sustainability report global reporting initiative index*. Retrieved from <http://learninglegacy.independent.gov.uk/documents/pdfs/sustainability/6-postgamesustainabilityreportgricontentindexfinal1-neutral.pdf>
- Mayor of London. (2007). *Five legacy commitments*. Greater London Authority. Retrieved from www.cslondon.org/wp-content/uploads/downloads/2008/01/GLA%20-%205-legacy-commitments.pdf
- ODA. (2007). *Sustainable development strategy*. Retrieved from <http://learninglegacy.independent.gov.uk/documents/pdfs/sustainability/22-sustainable-development-strategy-sust.pdf>
- ODA. (2012). *Olympic delivery authority annual report and accounts 2011–2012*. Retrieved from www.gov.uk/government/uploads/system/uploads/attachment_data/file/88754/ODA_Annual_Report_and_Accounts_2011-2012.pdf
- Ostrom, E. (2009a). *A polycentric approach for coping with climate change* (Unpublished manuscript). World Bank Policy Research Working Paper Series. Retrieved from <http://ssrn.com/abstract=1494833>
- Ostrom, E. (2009b). *Beyond markets and states: Polycentric governance of complex economic systems*. Retrieved from www.nobelprize.org/nobel_prizes/economic-sciences/laureates/2009/ostrom_lecture.pdf
- Ostrom, E., Gardner, R., & Walker, J. (1994). *Rules, games and common pool resource problems*. Ann Arbor, MI: University of Michigan Press.
- Perego, P., & Kolk, A. (2012). Multinationals' accountability on sustainability: The evolution of third-party assurance of sustainability reports. *Journal of Business Ethics*, 110, 173–190.
- Slack, T., & Parent, M. (2006). *Understanding sport organizations: The application of organization theory*. Champaign, IL: Human Kinetics.
- Sustainable Development Commission. (2005a). *The history*. Retrieved from www.sd-commission.org.uk/pages/history_sd.html
- Sustainable Development Commission. (2005b). *The principles*. Retrieved from www.sd-commission.org.uk/pages/the_principles.html
- Theodoraki, E. (2007). *Olympic event organisation*. Oxford: Butterworth-Heinemann.
- Theodoraki, E. (2009). Organisational communication on the impacts of the Athens 2004 Olympic Games. *Journal of Policy Research in Tourism, Leisure and Events*, 1, 141–155.
- Theodoraki, E. (2015). The problem with sporting mega event impact assessment. In Transparency International (Ed.), *Global corruption report: Sport* (pp. 185–197). Oxon: Routledge.

- Tokyo 2020. (2016). *Tokyo 2020 Olympic and Paralympic Games: High level sustainability plan*. Retrieved from <https://tokyo2020.jp/en/games/sustainability/data/sus-plan-EN.pdf>
- UNESCO. (2013). *Declaration of Berlin*. Retrieved from <http://unesdoc.unesco.org/images/0022/002211/221114e.pdf>
- World Commission on Environment and Development. (1987). *Our common future*. New York, NY: UN.
- Zadek, S., & Raynard, P. (2004). *The future of sustainability assurance* (ACCA Research Report No. 86). London: Certified Accountants Educational Trust. Retrieved from www.accountability.org/images/content/1/2/121/FOSA%20-%20Full%20Report.pdf

19

IMPLEMENTING ENVIRONMENTAL SUSTAINABILITY IN ATHLETIC TRAINING OPERATIONS

Kelly Potteiger

The environmental impact on health is a significant global issue. Despite the known health effects caused by environmental change, the healthcare industry is one of the largest contributors to environmental waste (Sattler & Hall, 2007). Athletic training is a healthcare profession in which practitioners work in conjunction with physicians in the prevention, emergency care, clinical diagnosis, therapeutic intervention, and rehabilitation of injuries and illnesses (National Athletic Trainers' Association, 2016). Athletic trainers are charged with optimizing the physical activity and participation of their patients. This patient population is particularly vulnerable to many of the illnesses and conditions attributed to environmental degradation, including heat illness, asthma and allergies, and various nutritional issues. Currently, there is little drive within the profession to further investigate how athletic trainers may help to prevent these injuries and illnesses. Therefore, the purposes of this chapter are to:

- 1 Explore the connection between waste and the impact of the health of the environment and the health of its population.
- 2 Report the current attitudes and perceptions toward issues related to environmental sustainability within the athletic training profession using the transtheoretical model as a conceptual framework.
- 3 Identify steps athletic trainers can take to reduce their environmental footprint within their professional practice.

Effects of waste on health of the environment

Healthcare facilities are one of the largest consumers of energy in the United States and produce approximately 5,000 tons of waste per year (Zimmer, 2001). This increase in energy use and overconsumption of materials leads to an associated rise in greenhouse gases (EPA, 2011b). Greenhouse gases can accrue in the lower atmosphere and trap energy provided by the sun. This entrapment of the sun's rays warms the Earth and instigates climate change. Climate change is defined as any significant change in measures of climate (i.e., temperature, precipitation, or wind) lasting for an extended period (i.e., a decade or longer) (EPA, 2011a). Although some

amount of climate change is natural, when it occurs more quickly than normal, it can affect the Earth's ecosystem.

The health of the population is closely linked to the health of the environment. Global climate change can affect human health in a variety of ways, including direct effect of heat (e.g., heat stroke), indirect effect of heat (e.g., cardiovascular and pulmonary strain), injuries and illnesses caused by severe weather (i.e., storms, flooding, and drought), increases in allergies and asthma due to air pollution, changes in vector-borne and waterborne disease transmission, and threats to food production which may result in malnutrition or starvation (Schwartz, Parker, Glass, & Hu, 2006).

Effects of heat

There is a U-shaped relationship between temperature and mortality rates (McMichael, Woodruff, & Hales, 2006). The optimal temperature for the population (i.e., comfort zone) is reflected by low mortality rates. This relationship varies according to average climate. Populations of warmer climates are more sensitive to cold extremes, whereas populations of colder climates are more sensitive to heat (Curriero et al., 2002; Keatinge et al., 2000). As temperatures diverge from the comfort zone, mortality rates increase (Curriero et al., 2002). An increase in the Earth's average temperature will result in a decrease of cold-related mortalities and an increase in heat-related deaths (McMichael et al., 2006). The elderly (Basu & Samet, 2002; McGeehin & Mirabelli, 2001) and children (Bouchama, 2004; O'Neil, Zanobetti, & Schwartz, 2003) are most at risk due to their decreased physical capacity for thermoregulation. Women (Díaz et al., 2002; Rooney, McMichael, Kovats, & Coleman, 1998), the mentally ill (McMichael et al., 2006), and those with pre-existing conditions (McMichael et al., 2006) or with thermally stressful occupations are also at increased risk.

Extreme weather events

The incidence of extreme weather events such as droughts or famines, extreme temperatures, floods, forest/scrub fires, cyclones, and windstorms is projected to escalate with increased climate variability (IPCC, 2001). From 1992 to 2001, there were 2,257 reported disasters due to such extreme weather events (McMichael et al., 2006). Flooding was the most frequent of these natural disasters (43 percent), which resulted in the death of approximately 100,000 people and affected 1 to 2 billion people. The act of flooding creates several health consequences (McMichael et al., 2006). Short-term health effects of flooding include injury, communicable disease, drowning, and exposure to toxic pollutants (Rose et al., 2001; Stachel et al., 2004). There are long-term health risks as well. These include malnutrition (Del Ninno & Lundber, 2005) and mental illness (Reacher et al., 2004).

Effects of air pollution

There are six major air pollutants: carbon monoxide (CO), ozone (O₃), particulate matter (PM), nitrous oxide (NO), sulfur dioxide (SO₂), and volatile organic compounds (VOCs) (Carlisle, 2001). Evidence suggests air pollutants, particularly ozone and carbon monoxide, may increase the incidence as well as exacerbate symptoms of asthma, allergies, and other respiratory conditions (Babin et al., 2007; Brunekreef et al., 2009; Carlisle, 2001; Diette, McCormack, Hansel, Breyse, & Matsui, 2008; Koren, 1995; Peden & Reed, 2010; Schwela, 2000; Turcotte, Langdeau, Thibault, & Boulet, 2003). Therefore, strategies that lead to even a modest change in air pollution

levels, such as altering transportation and commuting habits, can influence the incidence of asthmatic events (Friedman, Powell, & Hutwagner, 2001). Some proposed interventions to reduce exposure to irritants and allergens include limiting exercise outdoors, staying indoors, keeping windows and doors closed, and using air conditioning with special filters during high pollutant counts (Carlisle, 2001; Diette et al., 2008; Peden & Reed, 2010). In particular, physically active individuals are encouraged to avoid training or prolonged physical activity along busy roads or outside on hot, sunny days.

Infectious diseases

Forecasting of infectious diseases is difficult due to the multifaceted nature of disease transmission. However, several studies (Bentham & Langford, 1995; Checkley et al., 2000; Curriero, Patz, Rose, & Lele, 2001; D'Souza, Becker, Hall, & Moodie, 2004; Kovats et al., 2005; Reeves, Hardy, Reisen, & Milby, 1994; Rose et al., 2000; Rose et al., 2001) suggest both changes to and variability of the climate will increase the prevalence of diarrheal disease (e.g., food poisoning) and water- and vector-borne diseases. In times of natural disasters, the rates of infectious diseases typically rise. For example, excessive rainfall facilitates entry of animal waste and human sewage into waterways and can contaminate supplies of drinking water and facilitates an outbreak of communicable diseases (Curriero et al., 2001; McMichael et al., 2006).

However, the population is also at risk for water-borne diseases (e.g., cholera) due to water warming or flooding (Curriero et al., 2001; Reeves et al., 1994; Rose et al., 2000; Rose et al., 2001) and vector-borne infections (Hay et al., 2002; Loevinsohn, 1994; Reeves et al., 1994) (e.g., viral encephalitis, malaria) as a result of an increased exposure to those vectors (e.g., mosquitos, ticks).

Nutritional issues

The nutritional issues (i.e., malnutrition and starvation) that occur with changes in the climate are a direct effect of the degradation of the ecosystem (Booth & Zeller, 2005; McMichael, 2001; Parry, Rosenzweig, Iglesias, Livermore, & Fischer, 2004; U.S. Global Change Research Program, 2001). Evidence suggests rising sea levels will salinate coastal land and contaminate freshwater leading to impaired crops, livestock, and fishery yields (Parry et al., 2004; Pilkey & Cooper, 2004; U.S. Global Change Research Program, 2001). Although all populations are at risk, poorer countries will be most affected (Parry et al., 2004). Loss of livelihood, mental illness, and infectious disease may also occur (McMichael et al., 2006).

Waste produced in athletic training

Currently, only one empirical study has been published in the literature investigating the topic of environmental sustainability within the athletic training profession (see Potteiger, Pitney, Cappaert, & Wolf, 2016a, 2016b). This study used a mixed methods approach to examine the perceived waste produced by the practice of athletic training, as well as athletic trainers' attitudes, perceptions, and current practices of environmental sustainability techniques within their professional role.

In the study, 58 percent ($n = 260$) of athletic trainers believed there was a substantial amount of waste produced by the practice of athletic training. Ninety-two percent ($n = 408$) admitted they thought about the waste produced in their clinical daily practice. The most frequently reported waste was plastics ($n = 111$, 29 percent), water ($n = 88$, 23 percent), and paper for

administrative use ($n = 81$, 21 percent). Fifty-three percent ($n = 234$) agreed this waste had a direct impact on the environment.

This study also used focus groups and one-on-one interviews to further investigate the thoughts and feelings of athletic trainers toward issues of environmental sustainability. The types of waste most frequently reported by participants in the qualitative portion of the study varied from survey respondents. The use of cups, tape, and water were the most frequently reported concerns of this segment of the population.

Opinion and knowledge among athletic trainers

Overall, athletic trainers reported a positive opinion on issues related to environmental sustainability ($3.30 \pm .025$ on a five-point Likert scale). However, opinions of athletic trainers varied significantly ($F_{9,429} = 2.43, p < .05$) by their geographical location. Athletic trainers living and working in the northeast portion (i.e., Delaware, New Jersey, New York, Pennsylvania) of the United States held the highest opinion of the environment (3.42 ± 0.48), and athletic trainers living and working in the southern portion (i.e., Texas, Arkansas) of the United States held the lowest opinion (3.06 ± 0.52).

Athletic trainers' knowledge of green techniques was also assessed in the study. The mean knowledge score was 3.18 ± 0.53 using a five-point Likert scale. There was no significant difference ($F_{9,429} = .340, p > .05$) in the knowledge reported by athletic trainers across the United States. Seventy-four percent of athletic trainers reported they would like to be more environmentally conscientious in their practice of athletic training; however, only 38.1 percent reported feeling well educated in environmental sustainability issues.

Use of green techniques

The foundation of all conservation efforts is to reduce, reuse, and recycle. With these steps in mind, there are several ways athletic trainers can apply conservation concepts to their clinical practice in the attempt to decrease their environmental impact.

Reduce

The most frequently reported wastes by athletic trainers were plastics, water, and paper for administrative use. Plastic and water waste often accompany each other due to their use in rehydrating athletes in the attempt to optimize performance and avoid heat illness. Athletic trainers should evaluate their water distribution techniques to determine ways to decrease waste. For example, practitioners could invest in a commercially available hydration system to decrease the reliance on water coolers and bottles. Because most of these systems attach directly to a water source, the amount of water used is based on demand, thereby reducing water waste. One drawback to hydration systems is they are designed primarily for outdoor use. To reduce hydration-related waste during indoor activities, athletic trainers should look at their current practices and make modifications as appropriate for the setting. Examples include replacing paper cups with reusable water bottles or glass jars, recycling paper cups/plastic bottles as appropriate, or saving water at the end of events for future events. When this is not possible, athletic trainers should look for ways to purposefully distribute unused water near trees or in shrubs. Another option is to explore the implementation of rain barrels for gray water use.

Plastic and water waste also occur as a byproduct of treating injuries. Plastic ice bags and wrap are a staple supply of athletic trainers. To decrease waste, athletic trainers are encouraged to fill

whirlpools and make ice bags on an as-needed basis and recycle plastic bags and wrap after use. If athletic trainers need to prepare a large number of ice bags at one time, they should not close them until ready to use in the attempt to reduce waste without sacrificing efficiency. The use of reusable bandages is an eco-friendly alternative to plastic wrap. Unused ice can be discarded in the same manner as unused water as described earlier. Other eco-friendly alternatives to the use of traditional ice bags/wrap is encouraging patients to ice while resting to avoid the need for wrap or to use bags of frozen vegetables (e.g., peas, corn), which can be refrozen for multiple applications without the risks associated with use of chemical ice packs. In addition, therapeutic modalities should be turned off between use to curtail energy use.

The use of technology is encouraged to reduce reliance on paper for administrative use. There are many commercially available programs for electronic medical records to decrease reliance on paper records. The use of electronic medical records among athletic trainers is also encouraged within the profession to improve clinical decision-making, improve the continuity of care for patients, increase communication among care providers, and increase productivity (Stanley, n.d.).

In addition to electronic medical records, incorporating frequent use of mobile applications (apps) may decrease reliance on paper for administrative use. Several apps are available to assist the athletic trainer in administrative tasks such as providing patient education, researching medical conditions, designing therapy programs, and documenting and assessing injuries (Brown, Keeley, & Potteiger, 2015; Potteiger, Brown, & Keeley, 2015).

Reuse

Athletic trainers report frequently reusing materials in their clinical practice (Potteiger et al., 2016b). Crutches, elastic bandages, braces, sleeves and splints, and carbon electrodes are all commonly reused items. In addition, athletic trainers frequently look for ways to repurpose items, most commonly for use in physical rehabilitation. For example, the cardboard cores of tape rolls are often used as an aid to strengthen toe flexors during physical rehabilitation. Tape cores can also be fixed together and used as a heel lift during the application of tape and bandaging. Used coolers may be repurposed into slush baths. Shipping boxes and water bottles can be repurposed into storage containers to aid in the organization of medical kits and storage trunks. These are just a few ways athletic trainers report reusing materials. The types and amount of materials used will vary among clinical practice settings. Clinicians should continue to look for creative ways to reuse items in the effort to reduce landfill waste.

Recycle

Eighty-one percent of athletic trainers reported they currently recycle at their place of employment (Potteiger et al., 2016b). However, in 24.7 percent of those cases, recycling is limited to paper. Other types of frequently recycled materials include plastics, cardboard, aluminum, and glass. Other recyclable materials commonly used by athletic trainers include batteries, printer toner cartridges, ice coolers, metal, water, and cotton. However, these items were rarely reported as recycled by athletic trainers and are an area for improvement.

Motivators and barriers for change

In Potteiger et al. (2016a), athletic trainers reported both motivators and barriers to incorporating sustainable techniques in their clinical practice. When practitioners are aware of the effect

of their actions on the environment and are educated on the potential solutions for decreasing their impact, they are more likely to incorporate green techniques into their clinical practice. This awareness is not always a direct result of their experiences in the professional setting; athletic trainers report family influence (particularly by their children), institutional values (e.g., religion), and societal trends for their increased mindfulness. Therefore, if an institution can create a culture that values environmentally sustainable efforts, it will raise awareness and increase the likelihood of their employees' use of green techniques.

Although athletic trainers reported they were more likely to use green techniques due to an increased awareness of the issues, many will only do so if it is convenient. This is particularly true for recycling efforts. Therefore, when providing recycling services, facility managers should attempt to develop a recycling program that is readily accessible and requires a minimum amount of effort by its users. For best results, recycling containers should be located near workstations and accept mixed materials (i.e., paper, plastics, and cardboard).

Athletic trainers are also less likely to participate in conservation efforts if there are more pressing priorities (e.g., workload, time constraints) or they feel a lack of control of their working environment. For example, if the clinician is not responsible for preparing the facilities for an event, he or she is less likely to request recycling bins at that event. Similarly, if bureaucratic policies are not favorable to purchasing recycled equipment or allowing for repurposing of used equipment, athletic trainers are less likely to use eco-friendly techniques.

The availability of eco-friendly products is also a concern for athletic trainers. Most items designed for healthcare are single use and/or disposable. However, as awareness and demand increases, so should the availability of products. Therefore, it is important for budget managers to support and encourage the purchase of green products whenever possible. This may include purchasing supplies made from recycled materials, buying used equipment, or not replacing equipment as often.

Financial constraints are one priority athletic trainers report as both a motivator and a barrier to the use of green techniques. Some athletic trainers reported a decrease in available funding for supplies prompted the use of green techniques such as electing to use reusable water bottles instead of paper cups and recommending the use of prophylactic braces instead of using taping techniques. Other athletic trainers stated that the high cost of eco-friendly products prohibited purchasing even when the product was superior in quality and would result in less waste. Therefore, this is another aspect for budget managers to consider when approving purchasing decisions.

Stages of change model

Because this was a novel study, there is no appraisal as to how athletic trainers rank in their knowledge and opinion of the environment compared to other healthcare professions. However, the results of this study suggest there is room for improvement (Potteiger et al., 2016a). Changing habits is not easy and is often a multistep process (Prochaska & DiClemente, 2005).

The transtheoretical model (TTM), commonly referred to as the stages of change model, seeks to delineate this process into five steps:

- 1 Precontemplation: unawareness that a change is needed
- 2 Contemplation: gaining awareness that a change is needed
- 3 Preparation: an anticipatory stage before action is taken
- 4 Action: the change of behavior or a change of behavior introduced for less than six months
- 5 Maintenance: the persistence of a behavior change for a period of six months or more

Stages of change intervention strategy

When applying the TTM to precipitate the use of green techniques in athletic training, one must first consider the stage of change at which majority of the population is currently situated. This allows for interventions tailored for the intended audience.

Prochaska and colleagues (Prochaska & Velicer, 1997) identified a forecasting model for at-risk populations using the steps outlined in the TTM. According to Prochaska's rule, 40 percent of the population is in precontemplation, 40 percent in contemplation, and 20 percent is in the preparation phase. By applying this forecasting model to the existing research on environmental sustainability in athletic training, the following hypotheses can be made:

Precontemplation

The Prochaska model (Prochaska & Velicer, 1997) suggests 40 percent of all athletic trainers are currently situated in the precontemplation stage of change. This forecast coincides with the report that 41.1 percent of athletic trainers either do not know or disagree with the fact there is a substantial amount of waste produced by the practice of athletic training (Potteiger et al., 2016b). Some athletic trainers may not believe materials used in their professional practice are waste because they were used for specific purpose (e.g., tape used to wrap ankles prevented injury; therefore, it was not used in vain). Athletic trainers currently in the precontemplation stage of change need to become more aware of the health issues related to environmental degradation as well as the waste involved with their professional practice.

Contemplation

Using Prochaska's assumption (Prochaska & Velicer, 1997), 40 percent of athletic trainers are also currently in the contemplation stage of change. This implies athletic trainers are gaining an awareness of the issues related to sustainability. Athletic trainers in this stage may or may not be cognizant of the impact of their professional practice on the environment.

Of those surveyed, 47.7 percent agreed and 11.1 percent strongly agreed there is a substantial amount of waste produced by the practice of athletic training. These numbers suggest 58.8 percent of athletic trainers possess an awareness of the amount of waste produced. However, there is no way to separate those who are currently in contemplation from those in a more advanced stage of change.

Athletic trainers currently in the contemplation stage would benefit from an increased awareness of ways to go green, as well as become educated on some alternative strategies they can use to practice in a more sustainable way.

Preparation

Approximately 20 percent of athletic trainers may be in the preparation stage of change (Prochaska & Velicer, 1997). However, using the survey data, it is hard to dissociate participants in this stage from those in the contemplation phase. Participants in the preparation stage are aware of the waste produced by the practice of athletic training, yet they have not acted on their awareness.

Participants in this stage of change need more education about the implementation of green techniques. They need to be aware of the resources currently at their disposal, as well as solutions to overcoming common barriers such as creating an easy and convenient system for recycling.

Action

The number of participants who currently recycle (81.4 percent) and purchase recyclable/recycled products (28.9 percent work; 65.6 percent home) suggests some athletic trainers are currently in the action or maintenance stage of change. From these data, it is difficult to disassociate the two populations. Athletic trainers currently in the action phase may not fully comprehend ways they could be acting more sustainable. Athletic trainers in this stage of change may benefit from learning about alternative treatment techniques and other tips to conserve resources in the clinical setting (e.g., saving water for the next day, repurposing items for alternative uses). There may also be a need for establishing industry-wide environmentally friendly standards of practice.

Maintenance

Limited data may suggest some athletic trainers are in the maintenance stage of change. Two percent of survey respondents are members of their institutions' committees on environmental sustainability. Additionally, 11 percent of participants reported they, or one of their colleagues, implemented an environmental sustainability project at their place of employment. This data indicate some athletic trainers are committed to leading a change toward sustainability. These leaders need to be identified in the effort to learn more about their undertakings as well as to serve as an advocate for change.

Sustainability project ideas

Athletic trainers cite leadership as a potential solution to overcoming barriers to the implementation of green techniques. One or more people within the organization can operate as an agent of change by serving as an example to others. One way this can be accomplished is by initiating a sustainability project within the organization. There are several areas athletic trainers can focus their efforts toward improving the environment.

Leadership

Athletic trainers working in an educational setting may partner with the school's science department or Office of Sustainability to develop a plan to reduce waste while providing care to the student-athletes teams. Then initiated efforts can be publicized as a challenge to the student-athletes to find ways to reduce waste in their day-to-day efforts.

Education

Athletic trainers interact with a diverse array of people every day. Therefore, a sustainability project aimed at educating others and raising awareness of green efforts may be a natural fit. For example, many people do not know the proper way to dispose of expired medicine. Athletic trainers could help to publicize the Department of Justice's National Prescription Drug Take-Back Day or create educational materials to educate patients in the proper disposal of medications along with directions and contact information for local disposal centers.

Facilities

Athletic trainers are encouraged to speak to their facility managers regarding improvements to increase the energy and water efficiency of their athletic training clinics. Lights may be placed

on timers, or water sources can be placed on foot controls or automatic sensors in the effort to conserve resources. The installation of rain barrels outside the facility could serve as a disposal site for unused water and ice and may be reused to water the facility's landscaping.

Conclusion

As healthcare professionals, athletic trainers have a social responsibility to provide their patients with quality care while minimizing the negative effects on the environment. However, not all athletic trainers may be aware of the issues surrounding environmental sustainability or possess the education or discipline needed to alter their practice. It is important to remember that even small changes can make a big difference. Therefore, administrators should encourage interventions like the ones outlined in this chapter to help athletic trainers become more informed on the need and use of green techniques.

References

- Babin, S. M., Burkom, H. S., Holtry, R. S., Taberner, N. R., Stokes, L. D., Davies-Cole, J. O., . . . Lee, D. H. (2007). Pediatric patient asthma-related emergency department visits and admissions in Washington, DC, from 2001–2004 and associations with air quality, socio-economic status, and age group. *Environmental Health, 6*(9), 1–11.
- Basu, R., & Samet, J. (2002). Relationship between elevated ambient temperature and mortality: A review of epidemiological evidence. *Epidemiological Reviews, 24*, 190–202.
- Bentham, G., & Langford, I. (1995). Climate change and the incidence of food poisoning in England and Wales. *International Journal of Biometeorology, 39*, 81–86.
- Booth, S., & Zeller, D. (2005). Mercury, food webs, and marine mammals: Implications of diet and climate change for human health. *Environmental Health Perspectives, 113*, 521–526.
- Bouchama, A. (2004). The 2003 European heatwave. *Intensive Care Medicine, 30*, 1–3.
- Brown, C., Keeley, K., & Potteiger, K. (2015). The use of apps in athletic training, part I: Applications for sideline management. *International Journal of Athletic Therapy & Training, 20*(3), 13–19.
- Brunekreef, B., Beelen, R., Hoek, G., Schouten, L., Bausch-Goldbohm, S., Fischer, P., . . . van den Brandt, P. (2009). Effects of long-term exposure to traffic-related air pollution on respiratory and cardiovascular mortality in the Netherlands: The NLCS-AIR study. *Research Report Health Effects Institute, 139*, 5–89.
- Carlisle, A. (2001). Exercise and ambient air pollution. *British Journal of Sports Medicine, 35*, 214–222.
- Checkley, W., Epstein, L. D., Gilman, R. H., Figueroa, D., Cama, R. I., Patz, J. A., & Black, R. E. (2000). Effects of El Niño and ambient temperature on hospital admissions for diarrhoeal diseases in Peruvian children. *Lancet, 355*, 442–450.
- Curriero, F., Heiner, K., Samet, J., Zeger, S., Strug, L., & Patz, J. (2002). Temperature and mortality in 11 cities of the eastern United States. *American Journal of Epidemiology, 155*, 80–87.
- Curriero, F., Patz, J., Rose, G., & Lele, S. (2001). The association between extreme precipitation and waterborne disease outbreaks in the United States, 1948–1994. *American Journal of Public Health, 91*, 1194–1199.
- Del Ninno, C., & Lundber, M. (2005). Treading water: The long-term impact of the 1998 flood on nutrition in Bangladesh. *Economics & Human Biology, 3*, 67–96.
- Díaz, J., Jordán, A., García, R., López, C., Alberdi, J. C., Hernández, E., & Otero, A. (2002). Heat waves in Madrid 1986–1997: Effects on the health of the elderly. *International Archives of Occupational and Environmental Health, 75*, 163–170.
- Diette, G., McCormack, M., Hansel, N., Breyse, P., & Matsui, E. (2008). Environmental issues in managing asthma. *Respiratory Care, 53*, 602–617.
- D'Souza, R., Becker, N., Hall, G., & Moodie, K. (2004). Does ambient temperature affect foodborne disease? *Epidemiology, 15*, 86–92.
- EPA. (2011a). *Climate change: Basic information*. Retrieved from www.epa.gov/climatechange/basicinfo.html

- EPA. (2011b). *Climate change: Greenhouse gas emissions*. Retrieved from <http://epa.gov/climatechange/emissions/index.html>
- Friedman, M., Powell, K., & Hutwagner, L. (2001). Impact of changes in transportation and commuting behaviors during the 1996 summer Olympic games in Atlanta on air quality and childhood asthma. *Journal of the American Medical Association, 285*, 897–905.
- Hay, S. I., Cox, J., Rogers, D. J., Randolph, S. E., Stern, D. I., Shanks, G. D., . . . Snow, R. W. (2002). Climate change and the resurgence of malaria in the East African highlands. *Nature, 415*, 905–909.
- Intergovernmental Panel on Climate Change (IPCC). (2001). *Climate change 2001: The scientific basis*. Cambridge, UK: Cambridge University Press.
- Keatinge, W. R., Donaldson, G. C., Cordioli, E., Martinelli, M., Kunst, A. E., Mackenbach, J. P., . . . Vuori, I. (2000). Heat related mortality in warm and cold regions of Europe: Observational study. *BMJ, 321*, 670–673.
- Koren, H. (1995). Associations between criteria air pollutants and asthma. *Environmental Health Perspectives, 103*, 235–242.
- Kovats, R. S., Edwards, S. J., Charron, D., Cowden, J., D’Souza, R. M., Ebi, K. L., . . . Schmid, H. (2005). Climate variability and campylobacter infection: An international study. *International Journal of Biometeorology, 49*, 207–214.
- Loevinsohn, M. (1994). Climatic warming and increased malaria incidence in Rwanda. *Lancet, 343*, 714–718.
- McGeehin, M., & Mirabelli, M. (2001). The potential impacts of climate variability and change on temperature-related morbidity and mortality in the United States. *Environmental Health Perspectives, 109*, 185–189.
- McMichael, A. (2001). Impact of climatic and other environmental changes on food production and population health in the coming decades. *Proceedings of The Nutrition Society, 60*, 195–201.
- McMichael, A., Woodruff, R., & Hales, S. (2006). Climate change and human health: Present and future risks. *Lancet, 367*, 859–869.
- National Athletic Trainers’ Association (NATA). (2016). *Athletic training*. Retrieved from www.nata.org/about/athletic-training
- O’Neil, M., Zanobetti, A., & Schwartz, J. (2003). Modifiers of the temperature and mortality association in seven US cities. *American Journal of Epidemiology, 157*, 1074–1082.
- Parry, M., Rosenzweig, C., Iglesias, A., Livermore, M., & Fischer, G. (2004). Effects of climate change on global food production under SRES emissions and socio-economic scenarios. *Global Environmental Change, 4*, 53–67.
- Peden, D., & Reed, C. (2010). Environmental and occupational allergies. *Journal of Allergy and Clinical Immunology, 125*, S150–S160.
- Pilkey, O., & Cooper, J. (2004). Society and sea level rise. *Science, 303*, 1781–1782.
- Potteiger, K., Brown, C., & Keeley, K. (2015). The use of apps in athletic training, part II: Applications for clinical management. *International Journal of Athletic Therapy & Training, 20*(3), 20–24.
- Potteiger, K., Pitney, W., Cappaert, T., & Wolf, A. (2016a). Attitudes and perceptions of environmental sustainability in athletic training. Manuscript submitted for publication.
- Potteiger, K., Pitney, W., Cappaert, T., & Wolf, A. (2016b). Examining the environmental impact of athletic training: Perceptions of waste and use of green techniques. Manuscript submitted for publication.
- Prochaska, J., & DiClemente, C. (2005). *Handbook of psychotherapy integration* (2nd ed.). New York, NY: Oxford University Press.
- Prochaska, J. O., & Velicer, W. F. (1997). The transtheoretical model of health behavior change. *American Journal of Health Promotion, 12*, 38–48.
- Reacher, M., McKenzie, K., Lane, C., Nichols, T., Kedge, I., Iversen, A., . . . Lewes Flood Action Recovery Team. (2004). Health effects of flooding in Lewes: A comparison of reported gastrointestinal and other illness and mental health in flooded and non-flooded households. *Communicable Disease and Public Health, 7*, 39–46.
- Reeves, W., Hardy, J., Reisen, W., & Milby, M. (1994). Potential effect of global warming on mosquito-borne arboviruses. *Journal of Medical Entomology, 31*, 323–332.

- Rooney, C., McMichael, A., Kovats, R., & Coleman, M. (1998). Excess mortality in England and Wales during the 1995 heatwave. *Journal of Epidemiology & Community Health, 52*, 482–486.
- Rose, J., Daeschner, S., Easterling, D., Curriero, F., Lele, S., & Patz, J. (2000). Climate and waterborne disease outbreaks. *Journal of the American Water Works Association, 92*, 77–87.
- Rose, J., Epstein, P., Lipp, E., Sherman, B., Bernard, S., & Patz, J. (2001). Climate variability and change in the United States: Potential impacts on water and foodborne diseases caused by microbiologic agents. *Environmental Health Perspectives, 109*, 211–221.
- Sattler, B., & Hall, K. (2007). Healthy choices: Transforming our hospitals into environmentally healthy and safe places. *Online Journal of Issues in Nursing, 12*(2). Retrieved from www.nursingworld.org/MainMenuCategories/ANAMarketplace/ANAPeriodicals/OJIN/TableofContents/Volume122007/No2May07/HealthyChoices.html
- Schwartz, B., Parker, C., Glass, T., & Hu, H. (2006). Global environmental change: What can health providers and the environmental health community do about it now? *Environmental Health Perspectives, 114*, 1807–1812.
- Schwela, D. (2000). Air pollution and health in urban areas. *Reviews on Environmental Health, 15*, 13–42.
- Stachel, B., Götz, R., Herrmann, T., Krüger, F., Knoth, W., Pöpke, O., . . . Uhlig, S. (2004). The Elbe flood in August 2002 – occurrence of polychlorinated dibenzo-p-dioxins, polychlorinated dibenzofurans (PCDD/F) and dioxin-like PCB in suspended particulate matter (SPM), sediment and fish. *Water Science & Technology, 50*, 309–316.
- Stanley, O. (n.d.). *Why electronic medical record keeping works for athletic trainers*. NCAA. Retrieved from www.ncaa.org/health-and-safety/sport-science-institute/why-electronic-medical-record-keeping-works-athletic-trainers
- Turcotte, H., Langdeau, J., Thibault, G., & Boulet, L. (2003). Prevalence of respiratory symptoms in an athletic population. *Respiratory Medicine, 97*, 955–963.
- U.S. Global Change Research Program. (2001). *Climate change impacts on the United States: The potential consequences of climate variability and change*. Cambridge, UK: Cambridge University Press.
- Zimmer, C. (2001). Time to go green! H2E program can provide environmental and financial benefits. *Health Facilities Management, 14*(4), 33–36.



Taylor & Francis

Taylor & Francis Group
<http://taylorandfrancis.com>

SECTION 4

Event management



Taylor & Francis

Taylor & Francis Group
<http://taylorandfrancis.com>

SPORT VENUE SUSTAINABILITY

The role of local context and stakeholder engagement

Kathryn L. Heinze and Sara Soderstrom

Sports teams benefit from collaboration, but they also compete with each other in the green sphere just as they do on the field. Many teams keep rolling out improvements as they strive to have their stadiums or arenas be considered ‘the greenest.’ And in that game, we all win.

Tom Watson, *Seattle Times*, 2012

One way that sport is engaging in environmental sustainability is through event venue design and operations. Increasingly, stadiums, arenas, and ballparks in the United States, at both the collegiate and professional levels, are directing attention and resources towards “green” sourcing, design, and waste management (Henly, 2013; Henly, Hershkowitz, & Hoover, 2012). Sport venues are a unique vehicle for environmental sustainability. The scale of sport events, measured by the number of spectators who patronize venues each year, the food and beverages consumed, and the waste generated, is significant (Waste Management, 2012). Additionally, venues themselves are enormous physical spaces with substantial energy requirements, including lighting, water, turf, and electricity. Thus, there is an opportunity for sports venues to reduce their negative impact on the environment. A sports venue can promote environmental stewardship indirectly by engaging fans in behaviors that reduce its carbon footprint and extend beyond the venue (see Chapter 10). Sport events are uniquely capable of connecting people: bringing them together in the same physical space with a collective fan identity (Boyle & Magnusson, 2007; Underwood, Bond, & Baer, 2001). Fans, including those on opposite sides of environmental debates (Hoffman, 2011), experience venue sustainability initiatives together, in support of their team. Further, stadiums, arenas, and ballparks may provide the impetus for other venues within sport and organizations in the community to become more sustainable. Therefore, sports venues can play a proactive role in building greater societal support and acceptance of environmental sustainability.

In this chapter, we use institutional theory to shed light on the changing nature of sports venues as they become more environmentally sustainable. Institutional theory posits that organizations are shaped by their institutional environments that provide general rules for organizing, and corresponding meanings, values, and behaviors (Barley & Tolbert, 1997; Meyer & Rowan, 1977). Historically, it was not normative for sport organizations to engage in environmental sustainability

efforts; today, “green” practices are legitimate in the field of professional and collegiate sport in the US (Babiak & Trendafilova, 2011; Trendafilova, Babiak, & Heinze, 2013). Trendafilova and colleagues (2013) found that environmental management practices diffused across professional sport organizations in North America, in part, through associative behavior among sport organizations.

Organizations, however, respond differently to institutional change, with reactions ranging from conformity to resistance (Greenwood, Raynard, Kodeih, Micelotta, & Lounsbury, 2011; Oliver, 1991; Pache & Santos, 2010). Even when acquiescing to institutional demands, organizations translate new models to their local context, editing and reshaping them through processes of meaning making and social interactions with stakeholders (Binder, 2007; Sahlin & Wedlin, 2008; Zilber, 2007). This process leads to diverse responses to institutional change around environmental sustainability across sport venues: Edward Jones Dome in St. Louis offers grass-fed beef hot dogs and burgers, AT&T Park in San Francisco uses recyclable and compostable packaging, and FirstEnergy Stadium in Cleveland donates unused food.

The remainder of this chapter is structured as follows. We present an overview of sport venue sustainability in the United States, focusing on issues of sourcing, energy and environmental design, and waste. Then, we briefly review the concept of translation in the institutional theory literature and discuss the influence of the local context and stakeholder engagement on sport venues, as they translate models of environmental sustainability. Finally, we conclude with practical implications and future research directions at the intersection of sport venue sustainability and institutional theory.

Sport venue sustainability in the United States

Sports venues in the United States are increasingly engaging in environmental sustainability efforts. Formed in 2010, the Green Sports Alliance (GSA) promotes sustainable communities by “inspiring sports leagues, teams, venues, their partners and millions of fans to embrace renewable energy, healthy food, recycling, water efficiency, species preservation, safer chemicals and other environmentally preferable practices” (Green Sports Alliance, 2016, para. 1). GSA members now represent more than 300 sports organizations, including 183 venues. At the professional level, approximately 20 sports venues are LEED (Leadership in Energy and Environmental Design) certified, including 6 from the National Basketball Association, 4 from the National Football League, 5 from Major League Baseball, 3 from the National Hockey League, and 2 from Major League Soccer (Harder, 2015). Other venues are prioritizing sustainability without pursuing LEED certification. For example, Seattle teams have been longtime leaders in the movement (including founders of the GSA), but not all venues in the city are LEED certified. At the collegiate level, over 20 venues are LEED certified, including 14 basketball/volleyball arenas, 4 baseball or softball stadiums, 5 football stadiums, 1 aquatics complex, and 1 hockey arena (Buente, 2015). And in 2015, 38 National College Athletic Association (NCAA) football programs took part in the Game Day Challenge recycling competition (measuring each school’s best one-game waste diversion effort); participating stadiums recycled 2.5 million pounds of refuse.

In our discussion of the environmental sustainability of professional and collegiate sports venues, we categorize practices into three areas: sourcing, energy and environmental design, and waste management. We discuss institutionalized approaches around each of these and offer examples within sport venues.

Sourcing

One way that sports venues are becoming more environmentally sustainable is through sourcing. We focus in this chapter on sourcing related to the procurement of food and serviceware. Sustainable food sourcing practices include prioritizing USDA organic ingredients, using only certified sustainable seafood, choosing meats produced without the use of antibiotics, selecting local and seasonal ingredients, working with producers that have made a commitment to animal welfare, and purchasing items delivered in minimal, recycled content packaging (Henly & Krenza, 2015; Rio 2016 Organising Committee, 2014). For serviceware, sustainable sourcing includes procuring recyclable or compostable disposable serviceware and prioritizing serviceware made from postconsumer recycled content. These environmentally intelligent food service practices at sports venues and concessions can help build a more sustainable food system that conserves water, maintains soil nutrients, optimizes agricultural land use, and reduces greenhouse emissions and chemical inputs (Henly & Krenza, 2015).

Of the practices listed earlier, one of the common approaches for sport venues is to source local food. TD Garden (home of the Boston Bruins) procures produce and cheese from about 20 local farms, and AT&T Stadium (home of the Dallas Cowboys) purchases USDA organic produce from a nearby student-run farm (Henly & Krenza, 2015). Some venues even have their own gardens, including Sonoma Raceway (host of NASCAR) and Amalie Arena (home of the Tampa Bay Lightning). Another trend is offering organic meat and produce and vegetarian options: at Safeco Field (home of the Seattle Mariners), 100 percent of beef and pork is certified antibiotic and hormone free, and at Citizens Bank Park (home of the Philadelphia Phillies), 100 percent of concessions stands serve vegetarian food options (Henly & Krenza, 2015). Environmental procurement policies can be integrated into supplier selection and contracts. This is exemplified by Yale University that noted preference for concessions providers who meet environmental criteria such as local sourcing; elimination of plastic water bottles, polystyrene foam, and individual condiment packets; and use of recyclable or compostable serviceware (Henly, 2013).

Energy and environmental design

Another mechanism for sports venues to become more environmentally sustainable is through energy and environmental design. The institutional model of LEED certification provides a legitimate template for sports venues. LEED is an internationally recognized framework that focuses on environmentally sustainable building design, construction, operations, and maintenance (U.S. Green Building Council, 2016). By providing varying types (e.g., new construction, existing structure) and levels of certification (e.g., silver, gold, platinum), LEED tries to motivate all building owners to engage in practical and measurable sustainability improvements: use less energy, water, and natural resources; integrate environmental design for new building components; and correct operating inefficiencies.

MLB's Washington Nationals Park was the first professional stadium to achieve LEED new construction certification in 2008, and since then over a dozen professional stadiums and arenas and over two dozen collegiate sports venues have achieved LEED certifications across the country (Waste Management, 2012; Henly et al., 2012). The University of North Texas stadium was the first sports venue to achieve LEED platinum certification in 2011. It is powered by wind energy, designed for resource efficiency, and promoted as a "model green building in Texas" (Henly, 2013, p. 29). Beyond the certification process, venues are redesigning operations to minimize resource use. For example, the Minnesota Twins developed an innovative system for managing water use – they collect rainwater from various points around the stadium, treat it, and use it for irrigation and cleaning.

Waste management

The final category of sustainable practices for sports venues that we highlight in this chapter is waste management. One of the current institutional frameworks in this category is zero waste. Zero waste refers to waste management approaches that focus on waste prevention, rather than “end of pipe” waste disposal (Snow & Dickinson, 2001; Spiegelman, 2006). This model includes eliminating waste through recycling and reuse and restructuring production and distribution systems to reduce waste (Young, Ni, & Fan, 2010). Producing zero waste is a goal, not a hard target: the approach provides guiding principles for continually working towards eliminating waste (Snow & Dickinson, 2001). Another waste management framework that shares features of zero waste is the circular economy. Circular systems are designed to keep resources in use for as long as possible, extract the maximum value from them, and then recover and regenerate products and materials (WRAP, 2017).

Through zero waste and circular economy approaches, sports venues engage directly with fans to change behaviors and minimize the waste produced during any one event. At Yankee Stadium, there are 278 bins throughout the stadium to help fans compost and further the team’s zero waste goals (Henly & Krenza, 2015). University of Colorado, Boulder, changed all garbage cans to recycling and composting stations at football games, and student volunteers advise fans about separating materials (Henly, 2013). In addition to fan engagement, sports venues enact zero waste and circular economy practices with staff and vendors that involve reusing waste. For example, at Petco Park (home of the San Diego Padres), 100 percent of used cooking oil is recycled and donated as biodiesel to support local public transportation (Henly & Krenza, 2015). At Billie Jean King National Tennis Center (home of the U.S. Open), 180 tons of food waste is composted for local landscaping and farming use. Donating leftover food is also becoming more common: at FirstEnergy Stadium (home of the Cleveland Browns), 10,000 pounds of leftover unused food is donated each season to the Cleveland Food Bank; similarly, Marlins Park donates food to local seniors’ homes (Henly & Krenza, 2015).

Translating venue sustainability

For new understandings and institutional models of environmental sustainability in sports venues to endure, they must be translated locally. Translation is the process through which organizational actors interpret, edit, and “fill-in” models from the broader field level, reshaping what is finally transmitted (Czarniawska & Sevón, 1996; Suddaby & Greenwood, 2009; Zilber, 2006). This process introduces variation in organizational responses (Greenwood et al., 2011; Oliver, 1991; Pache & Santos, 2010), as reflected by the diverse examples of sourcing, energy and environmental design, and waste management practices highlighted earlier. Diversity in approaches stems from accommodating local interests and resources, as organizations attempt to ensure the acceptance and success of their efforts (Binder, 2007; Hallett, 2010), while staying true to institutional frameworks. In other contexts, scholars have found that departments within a single organization (Binder, 2007) and organizations in an industry (Haedicke, 2012) respond differently to field changes (e.g., regarding federal funding or market pressure to become more efficient) depending, in part, on local meaning making processes of stakeholders. Organizational leaders “interpret new practices and craft innovative organizational arrangements” (Haedicke, 2012, p. 44). We illustrate and theorize the role of local context and stakeholder engagement in this translation process for sport venues.

Local context

One factor that may shape the way that sports venues translate models of environmental sustainability to their organizations is the community context. Geographic communities serve as important touchstones for organizational behavior (Heinze, Soderstrom, & Heinze, 2016). Constituting organizations' more immediate institutional environment, communities are "a local level of analysis corresponding to the populations, organizations and markets located in a geographic territory" (Marquis & Battilana, 2009, p. 286). The community context includes both local culture and environmental conditions. Local culture – the shared understandings particular to a community – influences organizational behavior, including corporate social responsibility activities (Davis & Greve, 1997; Galaskiewicz, 1997; Galaskiewicz & Burt, 1991; Marquis, 2003; Marquis & Lounsbury, 2007). Similarly, organizational practices are likely adapted to local environmental factors, such as the amount of available water and sunlight. Prior work demonstrates that communities shape how organizations respond to and translate changes from the broader institutional field (Heinze et al., 2016).

Local culture

The values, expectations, and preferences of community members may inform sport venue sourcing and energy and environmental design. The impact of sport on sustainability is evident at Levi's Stadium and the Moda Center. Levi's (home of the San Francisco 49ers) is located in the Bay Area, which is known for its racial and ethnic diversity, being on the forefront of technological innovation, and valuing environmental stewardship. Centerplate, Levi's concessionaire, spent 3.5 years developing the stadium menu to align with the local culture, including surveying fans and Bay Area residents (Henly & Krenza, 2015). According to Centerplate General Manager Zachary Hensley,

We have been working with the team for years to combine smart data with operational expertise in designing our hospitality program, and to match the Bay Area's diverse culture and commitment to quality with the technological, environmental and design innovations that Levi's Stadium offers.

(Henly & Krenza, 2015, p. 26)

Levi's has the most vegan and vegetarian items of any NFL stadium and serves organic food and a variety of unique, local fare, including nopales, cactus torta sandwiches, chickpea curry, and portobello mushroom steamed bao (Henly & Krenza, 2015). The Moda Center also focuses on local sourcing. The team wants to support local farmers, benefit the local economy, and meet fan demand for local food (Henly & Krenza, 2015). Both venues – Levi's and Moda – are recognized for their energy and environmental design. Levi's was one of the first outdoor professional sport venue in the United States to achieve LEED Gold certification under the New Construction standard, and the Moda Center was among the first professional sports arenas in the world to achieve LEED Gold certification under the Existing Building standard.

Local environmental conditions

Environmental conditions can enable and constrain venues' sustainability practices, particularly those related to energy and environmental design. Environmental factors that enable sustainable

design at sports venues include wind, sun, and temperature. For example, in 2011, the University of North Texas installed three wind turbines. The turbines were specifically designed for implementation in an urban environment and are ideally suited for the wind conditions in the North Texas region (Henly, 2013). The Arizona State Sun Devils took advantage of the 300 days of annual sunshine in the Phoenix area by installing solar panels on nine of its facilities. Their latest project is the installation of solar arrays at the softball stadium that serve the dual function of harnessing solar energy while providing shade for fans as they watch games (Henly, 2013). Finally, the FirstEnergy Stadium's field surface is planted with Kentucky bluegrass, which is native to the state of Ohio and thrives in the cooler temperatures (Henly & Krenza, 2015).

In terms of constraints, venues in California have responded to drought concerns. Levi's Stadium prioritizes conserving water wherever possible. The Bermuda Bandera grass field requires 50 percent less water than typical NFL fields. They use recycled water for flushing toilets and field irrigation. 49ers Vice President of Stadium Operations Jim Mercurio notes, "Fans visiting the stadium will become more aware of the importance and viability of incorporating recycled water to encourage a sustainable Bay Area water supply" (Henly & Krenza, 2015, p. 26).

These examples of the influence of the local context on sport venue environmental sustainability practices suggest several themes related to translation. Regarding the LEED model, it seems that the local environmental conditions play a key role in shaping how sports venues translate the approach. With the sustainable sourcing approach, however, the cultural context appears central in the translation process.

Stakeholders

Another factor that influences how sports venues translate sustainability approaches is stakeholders, groups that can significantly affect or be affected by sport organizations' activities (Freeman, 1984). Maak and Pless (2006) argue that the role of leadership is to "build and cultivate sustainable and trustful relationships to different stakeholders inside and outside the organization and to coordinate their action to achieve . . . business sustainability and legitimacy" (p. 103). Stakeholder engagement is complex and multi-faceted. We focus in this section on teams' and venues' positive engagement with stakeholders in implementing sustainability goals related to food sourcing, energy and environmental design, and waste management. Stakeholders relevant to these goals include the following: local food producers, local businesses, concession management companies, vendors, engineers and construction companies, energy and facilities management, landscaping, staff, fans, and other teams. Professional sport venues must also engage with team ownership and league initiatives. College venues partner with university administration, faculty research, student-athletes, donors, and student organizations. By partnering with local stakeholders, sport venue leadership gives the community a role and responsibility in the translation process – enabling them to "fill in" the locally defined sustainability approach (Heinze et al., 2016). This can create a symbiotic relationship between stakeholders and venue leadership, helping meet venue sustainability goals based on local interests and needs. Further, stakeholder involvement can build local legitimacy and commitment to sustainable sports venues. Thus, stakeholder engagement helps sports venues generate support for environmental sustainability, co-construct and align sustainability initiatives, and build toolkits with sustainability-oriented skills.

Local support, commitment, and ownership

Stakeholder engagement within the organization and with community actors may help venues increase the likelihood of successful sustainability initiatives. These partnerships can build

local support, commitment, and ownership for the projects. For example, the Moda Center highlighted the importance of internal support from the franchise's leadership in achieving environmental goals, specifically greener food goals. The strong support from the Trail Blazers' executive leadership provided a positive opportunity structure for sustainability, enabling their sustainability team to incorporate green initiatives across the venue (Henly & Krenza, 2015). According to the University of North Texas sustainable stadium team, partnerships with local stakeholders (1) helped the team design a stadium that best meets local needs and (2) motivated local community members to commit to longer term involvement. As noted by UNT stadium sustainability lead Lauren Helixon, "This inclusive approach was even more important after the project was completed and events were developed to highlight the stadium" (as quoted in Henly, 2013, p. 33). She continued,

Thus far, conferences, banquets, and specialized tours have been hosted in the stadium. The success of these events has hinged on the adaptability of the space and the constant coordination among various units at the UNT campus. This helps the stadium achieve its maximum potential as an outreach tool.

(Henly, 2013, p. 33)

Co-construction and alignment

Through engagement with local stakeholders, managers of sport venues are able to better understand local needs and offerings and then construct their sustainability initiatives so that they align with local stakeholders. Similar to developing sustainability initiatives based on local environmental conditions, co-construction allows venues to take advantage of the strengths of local stakeholders and build successful programs. For example, the Portland Trail Blazers first partnered with well-known local restaurants who used sustainable practices to become vendors at the stadium. They saw increased sales and decreased environmental footprint due to their careful vetting process of the restaurants' ingredients and practices. For example, one partner, Widmer Brothers Brewery, has an on-site brewery and walks the beer to the concessions. The brewery further partners with local farmers and delivers its "waste" – spent yeast, hops, and grain – back to farms as animal feed, building a local circular economy (Henly & Krenza, 2015). The co-creation and alignment of sustainability initiatives help expand opportunities for the venue and local business community. By bringing products to the venue from local sustainable businesses, the venue improves its environmental sustainability. By partnering with the sports venue, the supplier increases its visibility and has an opportunity to grow their business. These stakeholder partnerships are a significant win-win in sports venue sustainability programs.

Sports venues often have the opportunity to partner with local schools and colleges to align sustainability initiatives with local education needs and interests. For example, AT&T Stadium (home of the Dallas Cowboys) partners with an organic farm run by college students from the nearby Paul Quinn College (Henly & Krenza, 2015). Students and staff maintain the farm, building knowledge of organic farm practices, while growing produce that is served at stadium events. They also donate 10 percent of the produce to the surrounding community, a food desert, to positively address a local need. Sonoma Raceway partners with a local high school to align their interest in an on-site garden with a local high school's goals in educating students on the organic food economy. Students plant and care for the garden, which produces food for catering and concessions at the raceway. These stakeholder relationships help the venue achieve its goals, while helping strengthen local communities.

Toolkits and sustainability oriented skills

As sports teams translate models of sustainability to their local venues, they are often faced with a challenge: addressing sustainability requires new and developing skills that may be absent from historical team staffing and support. Through engagement with stakeholders, teams can build the toolkits and develop the sustainability oriented skills necessary to successfully translate environmental sustainability to their venues. For example, technical resources for addressing energy conservation are often available on campus (for college venues) or within the region. At Colorado University, the athletics department worked with facilities management, which had energy conservation skills and knowledge from prior experience, to implement an energy conservation program at all athletic facilities (Henly, 2013). Arizona State University's athletics department, when faced with a lack of financing for solar energy, partnered with the school's facilities development and management departments to contract with external solar developers who designed, financed, installed, operated, and maintained most of the solar arrays (Henly, 2013).

Stakeholder engagement around building toolkits can help foster innovation. As the head of stadium sustainability at University of Minnesota noted, "We have found great success in partnering with the [20+ Fortune 500 companies within the Minneapolis–St. Paul metro area] and sharing our vision of sustainability, furthering innovation" (Henly, 2013, p. 56). FirstEnergy Stadium (Cleveland) partnered with The Ohio State University's College of Agriculture to develop an anaerobic digestion system for food waste. This innovative process diverts 40,000 tons of food waste per year from landfills into fertilizer and biogas. Thus, through stakeholder partnerships, sports venues can build their own sustainability toolkits and leverage the skills of local groups to develop more effective sustainability programs.

Sustainable partnerships

Several key themes characterize sustainable partnerships and relate to their success – both as partnerships and in achieving sustainability goals (Heinze, Soderstrom, & Zdroik, 2014). These themes are evident across the cases we highlighted. First, venues should engage with stakeholders with respect and humility: listen to different perspectives, defer to the expertise of various partners, and respect the knowledge and experience of the local organizations. Second, sports venues can play an enable role, helping their partners grow rather than just fulfilling their own goals. Third, sports venues should connect with stakeholders authentically, showing a genuine commitment to both helping and striving towards sustainability. Fourth, venue leadership should seek stakeholder engagement that is mutually beneficial for themselves and their partners in terms of sustainability and economic goals. Finally, sports venues are uniquely positioned through their status and reach to broker agreements among local stakeholders, connecting different organizations that are all committed to benefiting the local community. These themes are exemplified in this reflection by the Ohio State lead, "It is imperative to listen to the needs of all stakeholders and to take the time to learn how they do things and why . . . Communicate with all stakeholders out of respect to ensure there are no surprises" (Henly, 2013, p. 38).

Conclusion

The insights developed in this chapter yield recommendations for sport venues as they engage in environmental sustainability. First, we suggest venues should "look global, adapt local." As with other types of institutional change, for environmental sustainability, there are models at the field level. These approaches are legitimate, but they also tend to be broad or generic. In implementing

sustainability models (e.g., LEED, zero waste), sports venues should consider how to adapt them to meet the local culture and environmental conditions and the needs and interests of stakeholders. As part of this activity, venues should take into account not just the current context, but future opportunities and risks. The second implication we offer is for venues to “think: input, process, output.” In this chapter, we discussed three categories of environmental sustainability practices. Together, these categories prompt sport venues to attend to an overarching model and develop practices for each area: sourcing (input), energy and environmental design (process), and waste (output). Further, venues can draw inspiration from the examples we provided of current venue practices, as well as the diversity of activities. Finally, as we argue in the introduction, venues should leverage their power and influence as unifiers. Sport venues bring people together around a positive, shared activity. In addition to directly engaging in environmental sustainability, through reducing their own carbon footprint, venues can indirectly promote sustainability by shaping fan behavior and the perspective and activities of other organizations.

We used this chapter to identify a theoretical framework for shedding light on sport venues’ environmental sustainability practices. The concept of translation in institutional theory helps us understand sources of homogeneity and heterogeneity in institutional environments. Future research can empirically test the connections that we theorized. In particular, scholars should examine the causal influence of venue context and stakeholders on sourcing, design, and waste practices. Also, how are these relationships moderated by the type and level of sport? Related questions include: Which stakeholders are the highest priority for venues in each category of sustainability practices? What kinds of synergies can venues realize across categories of sustainability practices? And what are the direct and indirect impacts of venue environmental sustainability efforts? Beyond sports venues, future research can investigate processes of translation in other forms of sport environmentalism. Broader questions that are applicable to different sport organizations include: How does the local context enable the translation and implementation of environmental practices? How does the context constrain the choice of practices and their effectiveness? And what is the role of local networks and working groups in the diffusion of environmental sustainability practices across sports organizations and beyond sport (e.g., community organizations)? There is a significant opportunity for scholars to contribute to knowledge of sport organizations’ environmental sustainability, as well as the broader theoretical conversations around institutional change and translation.

References

- Babiak, K., & Trendafilova, S. (2011). CSR and environmental responsibility: Motives and pressures to adopt green management practices. *Corporate Social Responsibility and Environmental Management*, 18, 11–24.
- Barley, S. R., & Tolbert, P. S. (1997). Institutionalization and structuration: Studying the links between action and institution. *Organization Studies*, 18, 93–117.
- Binder, A. (2007). For love and money: Organizations’ creative responses to multiple environmental logics. *Theory and Society*, 36, 547–571.
- Boyle, B. A., & Magnusson, P. (2007). Social identity and brand equity formation: A comparative study of collegiate sports fans. *Journal of Sport Management*, 21, 497–520.
- Buente, S. (2015). *LEED in college sports: One-of-a-kind stories of history, resiliency & adaptive reuse*. U.S. Green Building Council. Retrieved from www.usgbc.org/articles/leed-college-sports-one-kind-stories-history-resiliency-adaptive-reuse
- Czarniawska, B., & Sevón, G. (Eds.). (1996). *Translating organizational change* (Vol. 56). Berlin: Walter de Gruyter.
- Davis, G. F., & Greve, H. R. (1997). Corporate elite networks and governance changes in the 1980s. *American Journal of Sociology*, 103, 1–37.

- Freeman, R. E. (1984). *Strategic management: A stakeholder approach*. Boston: Pitman Publishing.
- Galaskiewicz, J. (1997). An urban grants economy revisited: Corporate charitable contributions in the Twin Cities, 1979–1981, 1987–1989. *Administrative Science Quarterly*, 42, 445–471.
- Galaskiewicz, J., & Burt, R. S. (1991). Interorganization contagion in corporate philanthropy. *Administrative Science Quarterly*, 36, 88–105.
- Green Sports Alliance. (n.d.). *Member directory*. Retrieved from <http://greensportsalliance.org/about/>
- Greenwood, R., Raynard, M., Kodeih, F., Micelotta, E. R., & Lounsbury, M. (2011). Institutional complexity and organizational responses. *The Academy of Management Annals*, 5, 317–371.
- Haedicke, M. (2012). Keeping our mission, changing our system: Translation and organizational change in natural foods co-ops. *The Sociological Quarterly*, 53, 44–67.
- Hallett, T. (2010). The myth incarnate: Recoupling processes, turmoil, and inhabited institutions in an urban elementary school. *American Sociological Review*, 75, 52–74.
- Harder, J. (2015, September/October). Sustainable stadiums. *USGBC+*, 46–53.
- Heinze, K. L., Soderstrom, S., & Heinze, J. (2016). Translating institutional change to local communities: The role of linking organizations. *Organization Studies*, 37, 1141–1169.
- Heinze, K. L., Soderstrom, S., & Zdroik, J. (2014). Toward strategic and authentic corporate social Responsibility in professional sport: A case study of the Detroit Lions. *Journal of Sport Management*, 28, 672–686.
- Henly, A. (2013). *Collegiate game changers: How campus sport is going green*. Natural Resources Defense Council. Retrieved from www.nrdc.org/sports/collegiate-game-changers
- Henly, A., Hershkowitz, A., & Hoover, D. (2012). *Game changer: How the sports industry is saving the environment*. Natural Resources Defense Council. Retrieved from www.nrdc.org/resources/game-changer-how-sports-industry-saving-environment
- Henly, A., & Krenza, G. (2015). *Champions of game day food*. Natural Resources Defense Council and the Green Sports Alliance. Retrieved from www.nrdc.org/resources/champions-game-day-food
- Hoffman, A. J. (2011). Talking past each other? Cultural framing of skeptical and convinced logics in the climate change debate. *Organization & Environment*, 24, 3–33.
- Maak, T., & Pless, N. M. (2006). Responsible leadership in a stakeholder society – a relational perspective. *Journal of Business Ethics*, 66, 99–115.
- Marquis, C. (2003). The pressure of the past: Network imprinting in intercorporate communities. *Administrative Science Quarterly*, 48, 655–689.
- Marquis, C., & Battilana, J. (2009). Acting globally but thinking locally? The enduring influence of local communities on organizations. *Research in Organizational Behavior*, 29, 283–302.
- Marquis, C., & Lounsbury, M. (2007). Vive la résistance: Competing logics and the consolidation of US community banking. *Academy of Management Journal*, 50, 799–820.
- Meyer, J. W., & Rowan, B. (1977). Institutionalized organizations: Formal structure as myth and ceremony. *American Journal of Sociology*, 83, 340–363.
- Oliver, C. (1991). Strategic responses to institutional processes. *Academy of Management Review*, 16, 145–179.
- Pache, A. C., & Santos, F. (2010). When worlds collide: The internal dynamics of organizational responses to conflicting institutional demands. *Academy of Management Review*, 35, 455–476.
- Rio 2016 Organising Committee. (2014). *Rio 2016 taste of the games*. Rio de Janeiro: Rio 2016 Organising Committee for the Olympic and Paralympic Games.
- Sahlin, K., & Wedlin, L. (2008). Circulating ideas: Imitation, translation and editing. In R. Greenwood, C. Oliver, R. Suddaby, & K. Sahlin-Andersson (Eds.), *The Sage handbook of organizational institutionalism* (pp. 218–242). London: Sage.
- Snow, W., & Dickinson, J. (2001). *The end of waste: Zero waste by 2020*. Zero Waste New Zealand Trust. Retrieved from www.zerowaste.co.nz/assets/Reports/TheEndofWaste.pdf
- Spiegelman, H. (2006, March). *Transitioning to zero waste – What can local governments do now?* Paper presented at the BioCycle West Coast Conference, Portland, Oregon. Abstract retrieved from www.rcbc.ca/files/u3/PPI_Zero_Waste_and_Local_Govt.pdf
- Suddaby, R., & Greenwood, R. (2009). Methodological issues in researching institutional change. In D. A. Buchanan & A. Bryman (Eds.), *The Sage handbook of organizational research methods* (pp. 177–195). London: Sage.

- Trendafilova, S., Babiak, K., & Heinze, K. (2013). Corporate social responsibility and environmental sustainability: Why professional sport is greening the playing field. *Sport Management Review*, 16(3), 298–313.
- Underwood, R., Bond, E., & Baer, R. (2001). Building service brands via social identity: Lessons from the sports marketplace. *Journal of Marketing Theory and Practice*, 9, 1–13.
- U.S. Green Building Council. (2016). *LEED*. Retrieved from www.usgbc.org/leed
- Waste and Resources Action Programme (WRAP). (2017). *WRAP and the circular economy*. Retrieved January 24, 2017, from www.wrap.org.uk/about-us/about/wrap-and-circular-economy
- Waste Management. (2012). *Sustainable stadiums & arenas*. Retrieved from www.wm.com/sustainability-services/documents/insights/Stadiums%20and%20Arenas%20Insight.pdf
- Watson, T. (2012, April 6). Sports stadiums blossom into sustainability champs. *Seattle Times*. Retrieved from www.seattletimes.com/seattle-news/environment/sports-stadiums-blossom-into-sustainability-champs/
- Young, C. Y., Ni, S. P., & Fan, K. S. (2010). Working towards a zero waste environment in Taiwan. *Waste Management & Research*, 28, 236–244.
- Zilber, T. B. (2007). Stories and the discursive dynamics of institutional entrepreneurship: The case of Israeli high-tech after the bubble. *Organization Studies*, 28, 1035–1054.

SUSTAINABLE BEHAVIORS AND THE TAILGATER

Andy Gillentine

When you bring 90,000 attendees to the game, plus some thousands of people outside, it adds up . . . A little trash for everybody.

Ralph Johnson, University of Georgia (as quoted in Cavallaro, 2014)

Tailgating has become synonymous with sport and entertainment event consumption. Countless fans participate in pre- and post-event tailgates at a wide variety of sporting and entertainment events (Gillentine, Miller, & Crow, 2010). Tailgating has been frequently seen as a low-cost and low-maintenance component of the consumer event experience. As such, sport and entertainment marketers have readily leveraged the popularity of tailgating to add value to the event environment for customers. Research exploring the consumer motives, legal aspects, best practices, and event entrepreneurial opportunities associated with tailgating has yielded some interesting findings. Previous research has indicated that tailgating serves as an ideal medium to meet participants' need for social interaction, togetherness, excitement, and escape (Gillentine, 2003; James, Breezeel, & Ross, 2001). These findings have encouraged sport and entertainment event marketers and entrepreneurs to capitalize on the popularity of tailgating and use it as a tool to help promote and market events as well as generate new streams of income (Gillentine & Miller, 2015; Gillentine, Miller, & Calhoun, 2008; Gillentine, Miller, & Gallagher, 2015). Additional research has probed the possible economic impact and potential national/international entrepreneurial implications of tailgating (Brown, Gillentine, & Grady, 2011; Gallagher, Gillentine, & Miller, 2016; Gillentine & Miller, 2015). Current research has also indicated that despite these positive components attributed to tailgating, problems do exist (Gillentine, 2003; Gillentine & Miller, 2006; Gillentine et al., 2008; Gillentine, Miller, & Crow, 2010). Research examining the policies and procedures of colleges and universities specifically targeting tailgating found that they were vague or virtually nonexistent at many institutions (Miller & Gillentine, 2006). The study further suggested that existing policies did not contain the specific insight or depth needed for safe and secure tailgating events. A recent study extended the previous research and investigated the accessibility of tailgating events and its policies, procedures, and operations for compliance with the Americans with Disabilities Act (ADA) (Gillentine, Grady, Miller, & Pettus, 2016). However, little research examining the actual costs associated with tailgating for the participant, the organization, and/or the affected community has been conducted (Brown, Grady, & Gillentine, 2011).

The costs typically associated with tailgating can be examined from several different vantage points, including (1) consumer cost (i.e., to tailgaters), (2) organizational cost (i.e., to the sponsoring and/or host organization), and (3) stakeholder cost (i.e., to the local community, government, businesses). Expenditure decisions in each of these areas affect the other areas, necessitating that each be considered in terms of their impact on each other. Consumer cost relates to all costs incurred by the participants of tailgating events. These costs would include, but not be limited to, transportation to the event, parking/tailgating, food and beverage supplied, and ancillary materials such as chairs, tents, tables, and tableware (e.g., plates, utensils). The participant has the ability to determine the price point of many of these items with or without concern or consideration towards sustainability. The sponsoring and/or host organization costs include all costs incurred by the organizations with regard to hosting the tailgating event. These costs may relate to securing and maintaining access to and from the facility (e.g., provide roads, entrances, parking areas); management, security, and traffic control personnel (i.e., law enforcement); power needed for tailgating area; waste removal (i.e., trash and recyclables); and sanitation areas (i.e., restrooms). As with the consumer costs, organizational cost decisions may be made with little or no consideration of sustainability concerns. Stakeholder costs refer to all costs incurred by external organizations (public and private) that are affected positively or negatively, purposely or accidentally, by tailgating activities. These costs could include road maintenance, increased law enforcement and emergency service needs, increased waste disposal, increased power usage, higher water demands, and additional sanitation disposal. Each of the cost areas includes multiple possible decisions that could have potential environmental implications and consequences. Therefore, for the purpose of this chapter, a fourth cost of tailgating activities – the environmental cost – will be examined along with its relationship to and the implications for the related cost factors discussed.

Environmental cost

Environmental cost refers to all costs connected with the actual or potential deterioration of natural resources due to economic activities (as discussed in Chapter 15). Many of the components were previously considered as social costs and classified as an externality. An externality is defined as “the cost or benefit that affects a party who did not choose to incur that cost or benefit” (Buchanan & Stubblebine, 1962). Many environmental externalities have become internalized to the development of regulations and operating policies that require additional investment in terms of planning, training, regulations, and funding. Any cost that could be related to the environmental impacts of a product or a manufacturing process is an environmental cost. Additionally, all costs that arise due to general environmental work (i.e., training, materials, marketing) in a company are environmental costs.

These actual costs differentiate environmental cost from environmental impact. One common definition of environmental impact is: “Any change to the environment, whether adverse or beneficial, wholly or partially resulting from human activity, industry, or natural disasters. Includes all the social and physical effects of a development or government policy on the natural and built environment” (Burden, 2012). This accepted definition does not include the actual or potential cost involved with these impacts. As such, this chapter will discuss issues related to tailgating from an environmental cost perspective. These actual or potential costs will not be considered from a specific and/or confirmed budgetary amount, but rather, from the perspective of including this cost in budgeting decisions and its relationship to decisions made by tailgaters, organizations, and related community stakeholders.

The environmental costs associated with (but not limited to) tailgating include air pollution (discussed further in the next chapter), greenhouse gas emissions, waste production, energy

consumption, noise and light pollution, land damage/destruction, groundwater contamination, and potential biohazard waste. Each of these costs is discussed in turn next.

Air pollution

The greatest source of air pollution as it relates to tailgating is generated though a consumer's travel to and from the event. The U.S. Environmental Protection Agency suggests that over half of the air pollutants in the United States are generated by automobiles. The major pollutants from automobiles include carbon monoxide, nitrogen oxides, hydrocarbons, sulfur dioxide, hazardous air pollutants (toxics), particulate matter (PM), and greenhouse gases. Investigations of the impact of sporting and entertainment events on the environment indicate that nearly 90 percent of the "carbon footprint" left by these events is a result of transportation (air pollution) impact (Union of Concerned Scientists, 2016). The close concentration of automobiles and participants in a condensed time frame as found at sport and entertainment events adds to an increase of harmful chemicals to the atmosphere. Tailgating may actually encourage people not only to attend an event, but also to use individual transportation in order to facilitate their participation. Additional research has indicated that not only do cities hosting sporting events experience an increase in air pollutant levels on game days when compared to non-game days, but they also see increases in daily mortality for cardiovascular and respiratory problems (Rhodes, 2013). The research further identified a pattern of increased pollution during the course of the season. This prolonged exposure to traffic-related air pollutants has shown to be related to a large variety of health issues in individuals (Rhodes, 2013).

Recreational vehicles and campers are not only a popular mode of transportation to tailgating events but also frequently serve as housing for event participants and as a host site for tailgating activities. The use of the vehicles for a longer duration of time adds to the emission of pollutants in the air as well as the use of other energy sources (e.g., electricity, natural gas).

An additional source of air pollution associated with tailgating is the use of gas-powered generators as a source of electricity for individual tailgating sites. The small engines of generators are typically environmentally unsound, with estimates indicating they may emit as much carbon dioxide as 100 idling automobiles (Union of Concerned Scientists, 2016). In addition to this problem, portable generators greatly contribute to noise pollution (discussed in a later section).

Greenhouse gas emissions

As stated earlier, the high levels of fossil fuel consumption used in transportation to, from, and during the events contributes to the generation of greenhouse gasses. Transportation accounts for 26 percent of the greenhouses gases produced in the United States (Rhodes, 2013). These gases trap heat and make the planet warmer through what is referred to as the greenhouse effect. This is not, however, the only way that tailgating contributes to the production of greenhouse gas emissions. Greenhouse gases also are caused by the deforestation of large areas. In addition to the large space occupied by stadiums and arenas, tailgating areas in the form of parking lots and cleared fields may add to this problem by the clear cutting of trees and other foliage.

Waste production

Perhaps the most visible and, consequently, the most problematic environmental cost associated with tailgating is the generation of large amounts of waste (garbage). Estimates indicate that a college football crowd may generate in excess of 20 to 90 tons of waste products from tailgating

alone (Cavallaro, 2014). The waste is primarily generated through the use of non-reusable food and drink packaging but also includes ancillary items such as discarded coolers, chairs, tents, etc. The amount of waste generated is also affected by the time of the event. Events that have a later starting time offer participants more time to tailgate, and hence generate more waste products.

Energy consumption

Although tailgating is typically considered an outside activity, it is not free of energy demands and usage. Tailgating areas and lots must be properly lighted for a number of reasons. Designated tailgating areas may require an even greater source of illumination due to the likelihood of accidents if appropriate lighting was not present. Many tailgating areas have also installed electrical outlets throughout the area to allow for the use of electric equipment (e.g., televisions, radio, additional lighting, blenders). Each of these energy demands increases the environmental cost of tailgating activities through the generation of greenhouse gases.

Light and noise pollution

Although the lighted sky above and surrounding a stadium and/or arenas is often used as the backdrop for photographs used to market the events, they are not always seen as a welcome addition. Surrounding areas not associated with the event are forced to endure the increased lighting and noise generated by the events. Quite often, these events go until late in the evening and can be quite disruptive to everyday activities for those not participating.

Light pollution is defined by the International Dark Sky Association (2016) as the inappropriate or excessive use of artificial light. It can have serious environmental consequences for humans, wildlife, and our climate. Components of light pollution include:

- glare: excessive brightness which causes visual discomfort (high levels of glare can decrease visibility)
- skyglow: the brightening of the night sky over inhabited areas
- light trespassing: light falling where it is not intended, wanted, or needed
- clutter: bright, confusing, and excessive groupings of light sources, commonly found in over-lit urban areas.

Human health and well-being can be harmed from light pollution as it can disrupt natural biological functions such as eating and sleeping. Research indicates that light and noise pollution have the potential to affect the physiology, behavior, and reproduction of multiple animal species (Newport, Shorthouse, & Manning, 2014). Additionally, light pollution wastes energy, contributes to greenhouse gas production, and threatens astronomical research.

Noise pollution is defined as “an unwanted airborne pollutant produced by others; it is imposed on us without our consent, often against our wills, and at times, places, and volumes over which we have no control” (Goines & Hagler, 2007). Noise pollution has also been shown to cause a number of health-related problems, including stress-related illness, high blood pressure, speech interference, hearing loss, sleep interruption, and loss in productivity. Furthermore, noise pollution also affects wildlife by causing hearing loss, which lowers their defensive abilities, making them easier prey by predators, and inhibits the ability to hear mating calls.

Tailgating may contribute to each of these forms of pollution through the use of lights – both those supplied by the sponsoring organization in the general tailgating area and those additional lights utilized by tailgaters. Tailgaters and tailgating events contribute to noise pollution

through the playing of loud music, the high volume levels of televisions used in the tailgating sites, and through the general noise (e.g., yelling, cheering, singing, etc.) generated by boisterous participants.

Land damage/destruction (environmental degradation)

The destruction and land damage caused by tailgating comes in various forms. The most obvious is the leveling of land areas surrounding the event for parking and tailgating. Most often the leveling of area is coupled with the installment of asphalt or concrete parking surfaces. The loss of greenspace compounds the issue of greenhouse gas emissions. Some parking and tailgating areas try to combat this by adding green mediums to the areas or by leaving the actual parking area as a grassy surface with asphalt or concrete roadways. Although this method is often aesthetically more pleasing and often more budget friendly, it can also be an additional environmental cost because of the synthetic fertilizers, herbicides, and pesticides used to maintain the area. The use of these chemicals – both individually and in combination – has been linked to problems such as nutrient leaching (i.e., excess synthetic fertilizer washes out of the grass's root zone and into the watershed, wreaking havoc on the natural surrounding environment); pesticide-contaminated water supplies; air pollution; wildlife contamination (domestic and wild); and a variety of human health problems, including skin irritations, cancer, pregnancy problems, developmental issues (child and fetal), and blood and nerve disorders. According to the National Coalition for Pesticide-Free Lawns (2016):

Of 30 commonly used lawn pesticides, 19 are linked with cancer or carcinogenicity, 13 are linked to birth defects, 21 to reproductive effects, 26 to liver or kidney damage, 15 to neurotoxicity, and 11 to disruption of the endocrine system.

(p. 2)

In addition to the land damage caused by the use of synthetic fertilizers, herbicides, and pesticides, land destruction is frequently caused by the tailgaters themselves. Tailgating has left many previously grass-covered areas as flattened barren fields or muddy quagmires as a result of their use. Several reports have chronicled the damage done by tailgaters and the problems associated with it (e.g., Stanley-Becker, 2014). From the aforementioned issue of trash/waste generated to the expense of restoring the area, organizations are now faced with additional costs from this destructive behavior.

Groundwater contamination

Stormwater flows across hard surfaces (i.e., concrete or asphalt) and sweeps waste materials and liquids into storm drains. These products may include those frequently found at tailgating sites such as paint (often used to mark parking areas), spent oil, chemical cleaners, or other household products. Given the number of automobiles involved with tailgating, it is not unusual for motor oil, coolant, antifreeze, and other liquids to be swept out of the parking lots and tailgating areas, where it can seep into groundwater supplies. Improper waste disposal is an additional source of groundwater contamination. Tailgaters also frequently leave trash scattered throughout the tailgating area. Many organizations often report the “seas” of trash that exist following a sport or entertainment event. This improper disposal of waste products can lead to further groundwater contamination as liquid seeps out of the waste and onto the surface of natural turf areas, eventually washing off of these surfaced areas and onto natural surfaces or down storm drains.

Potential biohazard waste

Another potential environmental hazard generated at tailgating events is the creation of potential biohazards. This most commonly is associated with the use of portable toilets, frequently referred to as porta-potties or portalets. Porta-potties are frequently used at sport and entertainment venues that allow and encourage tailgating. The temporary facilities are not connected to sewage lines and act as a collection station for human waste. To minimize odor, a variety of chemicals are used including bromine, glutaraldehyde, and formaldehyde (gotügo Portable Restroom Solutions, 2014). These chemicals are also extremely hazardous to individuals and the environment if they leak from the structure. Unfortunately, it is a common site at events to see overflowing porta-potties after a few hours of tailgating. This spillage of a combination of porta-potties chemicals and raw sewage presents the possibility of many problems.

The introduction of human waste to the environment presents a potential for biohazard contamination to tailgating participants whether they have used the portalet or not. Participants can easily step into waste matter without realizing what it is. In grassy areas, it may appear to simply be mud, or it may not be apparent at all. The possible risk of exposure may increase for young tailgaters (children) who may be playing in the tailgating areas and lack awareness of the potential of danger due to exposure. Toddlers are at an especially high risk because of their proximity to the ground. Spillage of waste and chemicals from portalets may be caused not only from overuse but also from being placed on uneven surfaces.

The possible problems associated with porta-potties do not solely stem from spillage issues. Porta-potties may house a variety of potential health threats simply by using them. Whereas the location of germs and bacteria in restroom facilities are common, their existence in portable toilets could be greater due to the lack of constant waste removal. Several life-threatening viruses are commonly associated with porta-potties (Narins, 2015).

Although the use and deployment of porta-potties do have risks associated with them, they also provide an important function. In tailgating locations where no bathroom facilities are available, it is not uncommon for people to “relieve themselves” in the surrounding area. Human waste provides an immediate health concern for all tailgaters. Human waste contains numerous germs that can cause a variety of sicknesses and survive for a long periods, especially in liquids (Sten-Ziemons, 2012). Exposure to human waste can lead to transmission of germs through hand-to-mouth (oral-fecal route) or by insects.

The call for intervention

The sport and entertainment industry has been challenged on multiple occasions to take a leading role in relationship to environmental sustainability (ES). In his 2006 Ziegler address, Chalip stated, “Sport could be a vehicle by which to foster environmental awareness or environmental protections” (p. 10). Others have clearly identified the significant negative impact the sport and entertainment industries can have on the environment (Babiak & Trendafilova, 2011; Collins, Jones, & Munday, 2009; Maguire, 1999; Thibault, 2009). Although many sport organizations have implemented ES planning and programs, the overall change and adoption of ES strategies and methodologies have been relatively slow (Casper, Pfahl, & McSherry, 2012). Sport and entertainment managers must carefully evaluate possible dramatic changes in policy and operations and balance them between ES and organizational goals (Casper et al., 2012). In a survey of collegiate athletic administrators, 35 percent felt that ES initiatives would have a negative impact on departmental budgets (Casper et al., 2012). Additional research indicated that planning and

implementation of ES strategies and policies has typically been reactive rather than proactive (Trendafilova, Babiak, & Heinze, 2013). In order to develop an ES model of tailgating, it is important for each of the constituents to play an active role in modifying policies and behaviors. To facilitate this process, the following recommendations are offered, reflecting each of the areas of ES concern identified previously.

Recommended steps toward sustainable tailgating

Air pollution

Consumers

- 1 Carpool to reduce the number of vehicles transporting participants to the event
- 2 Utilize public transportation whenever possible
- 3 Eliminate the use of portable gas powered generators

Organizations

- 1 Offer incentives to tailgaters for carpooling
- 2 Offer clean power hookups for tailgating
- 3 Streamline ingress and egress routes from event
- 4 Support the use of pedicabs
- 5 Offer preferred parking/tailgating for electric/hybrid vehicles
- 6 Offer tailgating opportunities for pedestrians

Community Stakeholders

- 1 Offer public transportation routes convenient and efficient for event
- 2 Improve traffic management strategies
- 3 Design stadiums/arenas to maximize potential for mass transit access
- 4 Provide bicycle access/lanes to events
- 5 Enhance pedestrian access

Greenhouse gas emissions

Consumers

- 1 Utilize public transportation
- 2 Carpool to events
- 3 Minimize energy consumption in relationship to events
- 4 Use locally sourced products

Organizations

- 1 Avoid deforesting areas without compensating for loss
- 2 Provide/utilize efficient lighting systems
- 3 Provide incentives for environmentally sustainable travel
- 4 Utilize solar energy systems

Community Stakeholders

- 1 Provide sustainable energy options
- 2 Appropriate ingress and egress
- 3 Maintain and add greenspace in proximity to event

Waste production

Consumers

- 1 Utilize recyclable products and packaging
- 2 Appropriately place waste in receptacles
- 3 Do not discard personal items at event (e.g., chairs, tents, coolers)
- 4 Avoid single-use items (e.g., decorations, tablecloths, utensils)

Organizations

- 1 Provide appropriate and adequate waste receptacles
- 2 Waste receptacles must be distributed throughout tailgating area
- 3 Organize tailgating recycling programs
- 4 Offer rewards for tailgating recycling
- 5 Limit tailgating hours

Community Stakeholders

- 1 Ensure appropriate waste disposal receptacles are available and empty on event days
- 2 Clearly delineate waste and recycling receptacles

Noise and light pollution

Consumers

- 1 Refrain from using additional lighting in tailgating area
- 2 Do not play music or television/radio broadcasts through external speaker systems
- 3 Do not use portable generators

Organizations

- 1 Use only appropriate lighting levels
- 2 Ensure that tailgating arc lights have shielding to force light downward towards parking/tailgating area
- 3 Ensure that speaker systems are appropriate volume

Community Stakeholders

- 1 Make sure that areas utilized for tailgating are appropriately lighted
- 2 Do not allow unregulated loudspeakers to be used

Land damage/destruction

Consumers

- 1 Do not park or tailgate in non-designated areas
- 2 Do not disturb/destroy natural plant life
- 3 Do not dig holes or trenches
- 4 Avoid using tent stakes; substitute sand bags and/or other weights

Organizations

- 1 Clearly identify/mark tailgating areas and non-tailgating areas
- 2 Avoid using surrounding greenspace for tailgating events

Community Stakeholders

- 1 Identify appropriate tailgating and non-tailgating acres
- 2 Enforce parking regulations
- 3 Offer appropriate law enforcement

Groundwater contamination

Consumers

- 1 Never pour liquids (including waste water) on ground or down storm drains
- 2 Properly dispose of all materials and waste
- 3 Avoid using harsh and harmful chemicals at tailgating site

Organizations

- 1 Provide appropriate waste disposal areas
- 2 Clearly identify forbidden liquid products
- 3 Utilize landscaping and rainwater capture and re-use systems

Community Stakeholders

- 1 Clearly identify areas in which water contamination is probable
- 2 Offer appropriate liquid disposal receptacles/sites

Potential Biohazard Waste

Consumers

- 1 Do not urinate or defecate outside of bathrooms
- 2 Do not bring animals to tailgates
- 3 Do not move porta-potties

Organizations

- 1 Provide environmentally sustainable bathroom facilities that are connected to reliable sewage system
- 2 If porta-potties are used, select green products/versions
- 3 Ensure portalets are placed on level ground
- 4 Regularly pump/clean porta-potties during events
- 5 Immediately clean up any spills or leakages and warn participants of possible contamination.

Community Stakeholders

- 1 Ensure public restroom facilities are available to tailgaters
- 2 Ensure all bathroom facilities meet ES standards

Conclusion

Tailgating is a popular and valuable component of the sport and entertainment consumption experience. As such, it is the duty of sport and entertainment professionals to take the appropriate steps to protect its continued existence. The need to implement pro-ecological and environmental sustainable policies and practices is paramount. The sport and entertainment industry occupies an effective position for the promotion of these important and desirable behaviors. Their high level of visibility and level of celebrity status within their communities (i.e., local, national, and international) provide them a high perceived level of trustworthiness (Walker & Kent, 2009). Sport and entertainment entities are also associated with high levels of identification, commitment, and interest among their consumers (Babiak & Wolfe, 2009; Inoue & Kent, 2012; Trail, Robison, Dick, & Gillentine, 2003). These factors may facilitate a higher level of importance in the pro-environmental messages and actions taken by the organizations (Martin, Ross, & Irwin, 2015). This reflects the organizations' corporate social responsibility to initiate programs that promote pro-environment behaviors. Consistent displays of organizational responsiveness to environmental concerns can have a dramatic impact of participant behaviors and perceptions (Kellison & Mondello, 2012). Han, Nelson, & Kim (2015) stated that attendees' perceptions of ES efforts were "crucial" regarding the potential success of sustainability programs. The study further indicated that pro-environmental behaviors (on behalf of attendees/participants) can be facilitated through shared effort on behalf of the organization. The potential for sport to have a positive impact on pro-environmental behaviors has been identified by some of the world's most influential organizations, including the United Nations: "The inherent link between a clean environment and participation in sport is part of what makes sport a powerful tool for communicating environmental messages and encouraging action to clean up the environment" (UN Interagency Task Force on Sport for Development and Peace, 2003, pp. 13–14).

To ignore the potential environmental cost of tailgating activities would be irresponsible on behalf of consumers, organizations, and stakeholders. Environmental cost considerations must be recognized and operationalized by each of the groups. Without this action, the cumulative effect of tailgating on the environment could be considerable. Tailgaters and tailgating events have the opportunity to adopt strategies and methodologies that can minimize the potential economic cost of tailgating, thereby allowing it to remain an enjoyable activity for generations to come.

References

- Babiak, K., & Trendafilova, S. (2011). CSR and environmental responsibility: Motives and pressures to adopt green management practices. *Corporate Social Responsibility and Environmental Management*, 18, 11–24.
- Babiak, K., & Wolfe, R. (2009). Determinants of corporate social responsibility in professional sports: Internal and external factors. *Journal of Sport Management*, 23, 717–733.
- Brown, M., Gillentine, A., & Grady, J. (2011, September). *Underestimating economic impact: An analysis of overlooked event attendees*. Paper presented at the European Association of Sport Management Conference, Madrid, Spain. Abstract retrieved from www.easm.net/download/2011/8221e2f6a025e223d9e5909ee70bbe62.pdf
- Buchanan, J., & Stubblebine, C. (1962). Externality. *Economica*, 29, 371–384.
- Burden, E. (2012). *Illustrated dictionary of architecture* (3rd ed.). New York, NY: McGraw-Hill.
- Casper, J., Pfahl, M., & McSherry, M. (2012). Athletics department awareness and action regarding the environment: A study of NCAA athletics department sustainability practices. *Journal of Sport Management*, 26, 11–29.
- Cavallaro, G. (2014). Sunday in Athens: Cleaning up after gameday. *UGAnews*. Retrieved from www.redandblack.com/uganews/sunday-in-athens-cleaning-up-after-gameday/article_369e4f64-71f2-11e4-a2ce-eb1ab47b264a.html
- Chalip, L. (2006). Toward a distinctive sport management discipline. *Journal of Sport Management*, 20, 1–21.
- Collins, A., Jones, C., & Munday, M. (2009). Assessing the environmental impacts of mega sporting events: Two options? *Tourism Management*, 30, 828–837.
- Gallagher, D., Gillentine, A., & Miller, J. (2016, June). *Realizing entrepreneurial opportunities & alternative revenue in the global sport and entertainment marketplace*. Paper presented at the North American Society of Sport Management Conference, Orlando, Florida. Abstract retrieved from www.nassm.org/files/conf_abstracts/2016-008.pdf
- Gillentine, A. (2003, January). *Factors associated with participation in pre-game activities*. Paper presented at the Southern District American Alliance Health, Physical Education, Recreation, & Dance Conference, Savannah, Georgia.
- Gillentine, A., Grady, J., Miller, J., & Pettus, K. (2016). Accessible tailgating: An examination of ADA requirements and implications associated with tailgating activities. *Journal of Legal Aspects of Sport*, 26, 52–65.
- Gillentine, A., & Miller, J. (2015, February). *Tailgating meets entrepreneurship: The growth of a cottage industry*. Paper presented at the Southern Sport Management Association Conference, Baton Rouge, Louisiana.
- Gillentine, A., & Miller, J. (2006). The legal implications of tailgating. *International Journal of Sport Management*, 7, 102–111.
- Gillentine, A., Miller, J., & Calhoun, A. (2008). Negligent marketing: “What all sport marketers should know.” *Journal of Contemporary Athletics*, 3, 161–172.
- Gillentine, A., Miller, J., & Crow, B. (2010). Developing a best practice model for tailgating events. *Journal of Event & Venue Management*, 2, 54–68.
- Gillentine, A., Miller, J., & Gallagher, D. (2015, September). *The emergence of tailgating as an industry standard: An examination of the global implications and possibilities*. Paper presented at the European Association of Sport Management Conference, Dublin, Ireland. Abstract retrieved from www.easm.net/download/2015/easm2EASM-2015-290-R1-833.pdf
- Goines, L., & Hagler, L. (2007). Noise pollution: A modern plague. *Southern Medical Journal*, 100, 287–294.
- gotügo Portable Restroom Solutions. (2014). *Porta potties and their carbon footprint*. Retrieved from www.gotugo.com/blog/company-news/porta-potty-carbon-footpring/
- Han, J., Nelson, C., & Kim, C. (2015). Pro-environmental behavior in sport event tourism: Roles of event attendees and destinations. *Tourism Geographies*, 17, 719–737.
- Inoue, Y., & Kent, A. (2012). Sport teams as promoters of pro-environmental behavior: An empirical study. *Journal of Sport Management*, 26, 417–432.
- International Dark Sky Association. (2016). *Light pollution*. Retrieved from <http://darksky.org/light-pollution/>
- James, J., Breezeel, G., & Ross, S. (2001). A two-stage study of the reasons to begin and continue tailgating. *Sport Marketing Quarterly*, 10, 221–222.

- Kellison, T. B., & Mondello, M. J. (2012). Organisational perception management in sport: The use of corporate pro-environmental behavior for desired facility referenda outcomes. *Sport Management Review, 15*, 500–512.
- Maguire, J. A. (1999). *Global sport: Identities, societies, civilizations*. Cambridge, UK: Polity Press.
- Martin, N., Ross, S., & Irwin, R. (2015). Utilizing community-based social marketing in a recycling intervention with tailgaters. *Journal of Intercollegiate Sport, 8*, 57–81.
- Miller, J., & Gillentine, A. (2006). An analysis of tailgating policies at Division I universities. *Journal of Legal Aspects of Sport, 16*, 197–215.
- Narins, E. (2015, April 10). Life threatening infections you can get from using a porta-potty. *Cosmopolitan*. Retrieved from www.cosmopolitan.com/health-fitness/a38878/life-threatening-infections-you-can-get-from-using-a-porta-potty/
- National Coalition for Pesticide-Free Lawns. (2016). *Lawns and landscapes*. Retrieved from www.beyond-pesticides.org/programs/lawns-and-landscapes/overview
- Newport, J., Shorthouse, D. J., & Manning, A. D. (2014). The effects of light and noise from urban development on biodiversity: Implications for protected areas in Australia. *Ecological Management & Restoration, 15*, 204–214.
- Rhodes, M. (2013). *Pigskin, tailgating and pollution: Estimating the environmental impact of sporting events* (Unpublished manuscript). University of North Carolina at Greensboro, Greensboro, NC.
- Stanley-Becker, I. (2014, June 23). Pittsburgh wants to recoup services costs from concert. *Pittsburgh Post-Gazette*. Retrieved from www.post-gazette.com/local/city/2014/06/23/Mayor-s-office-looking-for-ways-to-limit-city-s-costs-in-large-events/stories/201406230140
- Sten-Ziemons, A. (2012). Lack of toilets poses serious health threat. *Deutsche Welle*. Retrieved from <http://dw.com/p/14zRk>
- Thibault, L. (2009). Globalization of sport: An inconvenient truth. *Journal of Sport Management, 23*, 1–20.
- Trail, G. T., Robinson, M. J., Dick, R., & Gillentine, A. (2003). Motives and points of attachment: Fans versus spectators in intercollegiate athletics. *Sport Marketing Quarterly, 12*, 217–227.
- Trendafilova, S., Babiak, K., & Heinze, K. (2013). Corporate social responsibility and environmental sustainability: Why professional sport is greening the playing field. *Sport Management Review, 16*, 298–313.
- U.N. Interagency Task Force on Sport for Development and Peace. (2003). *Sport as a tool of development and peace: Towards achieving the millennium development goals*. Retrieved from www/un.org/sport2005/
- Union of Concerned Scientists. (2016). *Cars, trucks, and air pollution*. Retrieved from www.ucsusa.org/clean-vehicles/vehicles-air-pollution-and-human-health/cars-trucks-air-pollution#.V18v41dUpc
- Walker, M., & Kent, A. (2009). Do fans care? Assessing the influence of corporate social responsibility on consumer attitudes in sport. *Journal of Sport Management, 23*, 743–769.

Recommended Additional Reading

- Book, K., & Carlson, B. (2011). A diagnosis of environmental awareness in sport and sport policy. *International Journal of Sport Policy and Politics, 3*, 401–416.
- Brymer, E., Downey, G., & Gray, T. (2009). Extreme sports as a precursor to environmental sustainability. *Journal of Sport and Tourism, 14*, 193–204.
- Chard, C., Mallen, C., & Bradish, C. (2012). Marketing and environmental sustainability in the Sport sector: Developing a research agenda for action. *Journal of Management and Sustainability, 3*, 45–62.
- Ewald, J. (2014). Noise pollution: How it affects your body. *Life & Health Network*. Retrieved from <http://lifeandhealth.org/lifestyle/how-noise-pollution-affects-the-body/1658.html>
- Huang, F-H., Ye, Y-J., & Kao, C-H. (2015). Developing a novel Intuitionistic Fuzzy Importance – performance Analysis for evaluating corporate social responsibility in sport tourism event. *Expert Systems with Applications, 42*, 6530–6538.
- Initiative for Global Environmental Leadership. (2013). *The green sports movement*. Retrieved from <http://knowledge.wharton.upenn.edu/special-report/greening-sports-industry/>
- Mallen, C., Adams, L., Stevens, J., & Thompson, L. (2010). Environmental sustainability in sports facility management: A Delphi study. *European Sport Management Quarterly, 10*, 367–289.

- Mallen, C., & Chard, C. (2011). A framework for debating the future of environmental sustainability in the sport academy. *Sport Management Review, 14*, 424–433.
- McCullough, B. P. (2013). Identifying the influences on sport spectator recycling behaviours using the theory of planned behaviour. *International Journal of Sport Management and Marketing, 14*, 146–168.
- Smith, A. (2009). Theorizing the relationship between major sport events and social sustainability. *Journal of Sport & Tourism, 14*, 109–120.

TAILGATING AND AIR QUALITY

Jonathan M. Casper and Kyle S. Bunds

The energy required to operate a sports venue is fairly minor compared to the energy that fans expend in simply getting to a game (Koerner, 2009). No matter how big the facility, the largest carbon impact of sports events typically comes from fan travel and activities (Orts & Spigonardo, 2013).

To demonstrate the impact of fans on the environment, Koerner (2009) explains that a football stadium that seats approximately 78,000 fans will consume about 65,000 kilowatt hours of electricity and 35,000 cubic feet of natural gas on game day. She estimated that a major football game ends up emitting about 47.6 metric tons of carbon into the atmosphere – or just 1.35 pounds per fan. In comparison, the average American’s carbon footprint is 64.81 pounds per day. So, gathering 78,000 fans in one relatively compact place seems pretty efficient. But a stadium of that size will have approximately 19,000 parking spaces. So assuming that all the fans drive standard cars and light trucks, which average 21 miles per gallon, and each fan travels 29 miles round trip from home to game, all those cars emit 232.84 metric tons of carbon dioxide. So 83 percent of all carbon dioxide emitted on a typical game day is associated just with fan travel. Much of these emissions end up in the air we breathe.

The purposes of this chapter are to explore the sport stadium as a microenvironment and understand attendees’ exposure levels to selected air pollutants. This chapter shows how air pollutants such as ozone, carbon monoxide, and particulate matter can be measured at a stadium and its tailgating lots. Findings of air pollution overall and within tailgating areas at collegiate football games are shown. Additionally, practical implications related to air pollution reduction actions and managerial changes are suggested.

The impact of fan travel is not unique to football but all major sport events. Collins and Flynn (2008) examined the Football Association Challenge Cup Final and found the most significant area of consumption was visitor travel, which created a total footprint of 1,670 global hectares. In professional basketball, The Portland Trail Blazers estimate that energy used by the arena is responsible for 24 percent of its carbon footprint, and 73 percent is related to transportation (Orts & Spigonardo, 2013). Bsales and Sarkis (n.d.) found fan travel to professional baseball games emit a significant amount of CO₂ (see Table 22.1) and when extrapolated out to an entire season, it is clear that reduction strategies should be implemented.

Table 22.1 Travel emissions per game, vehicles only

Stadium	Parking Spots	Total Miles Driven	CO ₂ e(lbs)
Dodger Stadium	16,000	960,000	828,459
AT&T Park (S.F. Giants)	4,000	240,000	207,115
MetLife Stadium (NY Jets and Giants)	23,800	1,428,000	1,232,332

Note. Based on 300-mi distance, 22.5 mpg, 19.417 lbs CO₂e per gallon. CO₂e = carbon dioxide equivalent.

Air quality and health effects

Equally important to the environmental impact of sport events is the associated impact on human health. Sport events result in a disproportionate number of cars converging on a relatively small space (Rhodes, 2013). The emissions related to major sporting events affect individuals in the surrounding city and even more on an individual level with fans attending the events. Fan travel and tailgating activities create a micro-climate where air pollution spikes.

Air pollution consists of fine particles released into the atmosphere that have been found to have a deleterious impact on health, including cardiovascular disease, respiratory disease, and death (Jiao & Frey, 2014). Particulate matter (PM) – which is made up of a number of components including acids (such as nitrates and sulfates), organic chemicals, metals, and soil or dust particles (EPA, 2013) – and carbon monoxide (CO) – a tasteless, odorless gas generated by combustion (Bell, Ebisu, Peng, Samet, & Dominici, 2009; Bell, Peng, Dominici, & Samet, 2009) – are major air pollutants emitted from vehicle exhaust and have been connected to adverse health outcomes (Jiao & Frey, 2014). Ozone (O₃) is a pollutant produced in the atmosphere as a result of precursor emissions of nitrogen oxides and organic compounds. Human exposure to ozone causes a range of short-term and long-term adverse health effects (Environmental Protection Agency, 2013). These impacts are important because of recent and persistent evidence suggesting that short-term changes in pollution, especially to particulate matter PM₁₀ and PM_{2.5}, can increase daily mortality and cardiovascular death (Brook et al., 2010), increase respiratory mortality (Anderson, Thundiyil, & Stolbach, 2012), and increase the occurrence of asthma symptoms in children (Weinmayr, Romeo, De Sario, Weiland, & Forastiere, 2010).

Researchers have examined the effects of extreme exposure to fine particulate air pollution in relatively short amounts of time, for example during transport micro-environments (e.g., Adams, Nieuwenhuijsen, Colvile, McMullen, & Khandelwal, 2001; Jiao & Frey, 2014), finding that during commutes, individuals are subjected to high levels of PM_{2.5} and CO. Similar level of exposures may also exist at sport event, especially among tailgaters who spend large amounts of time before and after games breathing in the toxins.

Tailgating

Whereas we understand the impact of fan travel to and from major sporting events, we know less about the environmental impacts of fan behavior at the events, specifically during tailgating. The term *tailgating* is derived from the use of truck tailgates as gathering spaces for sharing food and drink with friends, family members, and fellow fans in a communal experience before events (Delaney, 2008). Tailgating usually happens many hours before the events and sometimes even after. It is during this time that individuals are exposed to the auto emissions resultant of traffic flow into the event, the air pollution emission associated with tailgating itself, and auto emissions

after the event while exiting the stadia grounds. Thus, tailgaters are exposed to a micro-climate inundated with fumes from diesel exhaust, gasoline exhaust, generator exhaust, and charcoal grills, among other air pollutant sources.

Methods for measuring air pollution

The study discussed in this chapter represents the first attempt to understand the impact of air pollution at sport events where people actually breathe, as opposed to previous research that has utilized fixed monitors for city-wide data generation that are often placed well above the breathing zones (Williams, Atkinson, Anderson, & Kelly, 2014). A football game and the attendant spectacle surrounding the football game, including tailgating, was chosen as the study site because of the high number of people who attend football games yearly (roughly 50 million; NCAA, 2016); the nature of tailgating “lots” with high rates of motor vehicle transportation, generators, and charcoal emissions; and the ability to clearly define a boundary around the tailgating lot.

Therefore, we defined Carter Finley Stadium (North Carolina State University in Raleigh, North Carolina) and the specified tailgating lots surrounding the stadium as our study location. The challenge was to accurately measure air pollution associated with event activity. In the following parts of the method, we discuss our instrumentation, procedures before measurement, and procedures during measurement.

Instrumentation

Five Dylos stationary monitors were utilized to capture ambient air at the edges of the tailgating parking lots. Dylos monitors use a laser scanner that measures particles (in particular $PM_{2.5}$) every 10 seconds. The monitors have a fan that draws in air, but the fan must be kept dry; therefore, cases were fabricated to protect the equipment in the event of rain (see Figure 22.1).



Figure 22.1 Dylos monitor and rain-proof enclosure



Figure 22.2 Instrumented backpack for Comparison of Air Pollution in Transportation microENVironments (CAPTEN) for particulate matter, carbon monoxide, ozone, temperature, humidity, and location

Additionally, we deployed Chris Frey's Comparison of Air Pollution in Transportation ENVironments (CAPTEN; see Figure 22.2) system in an effort to capture the unique exposure experienced in each tailgating lot. The CAPTEN uses active air intake (like a human lung) and has instruments for measuring PM, CO, CO₂, ozone, relative humidity, and temperature. In the following two sections, we explain more specifically how each instrument was utilized.

Procedures before measurement

In terms of information gathering for the placing of monitors and deciding on a best path, we first examined the historical wind patterns to determine upwind and downwind boundaries. Next, we walked the entirety of the stadium tailgate lots to determine where stationary monitors would work best and how much time it would take us to make one loop around all lots. Finally, we worked with local police and university personnel to educate them about our procedure, ensuring our ability to conduct the research. This meeting was necessary for access to the events and for placing the monitors on light poles. Additionally, we needed to inform the police and security of what we were doing given the potential security issues associated with an individual carrying a 30-pound backpack through large crowds and into a stadium.

Procedures during measurement

The five Dylos stationary monitors were set up in the northeastern, northwestern, western, southern, and eastern boundaries of the tailgate/stadium ground area. The stationary monitors recorded air quality three hours before the game, at the time of kickoff, and three hours post-game.

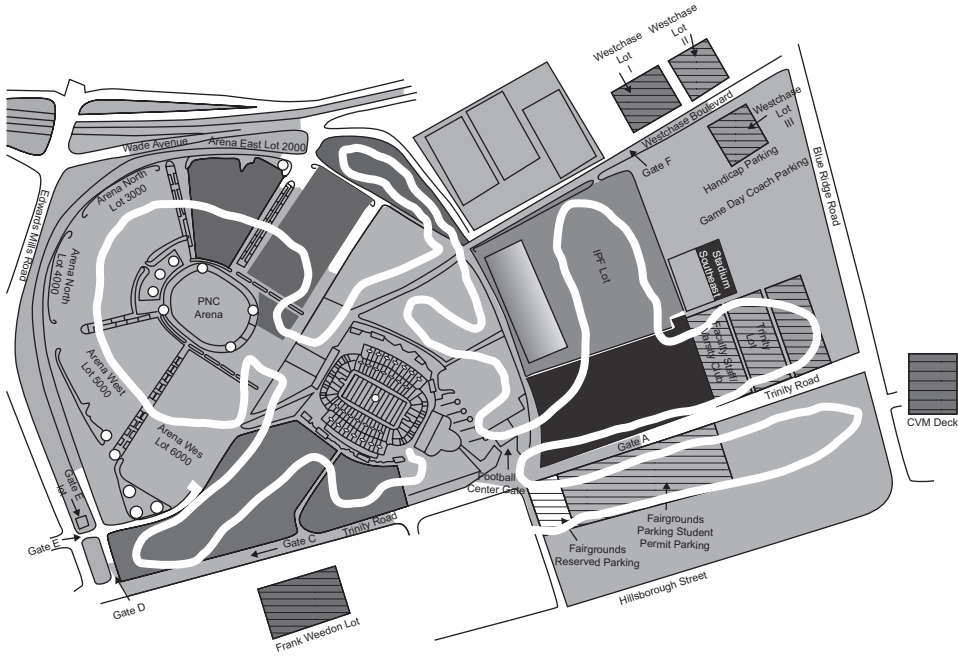


Figure 22.3 Transect map for mobile data collection using CAPTEN (line shows path taken)

We deployed the CAPTEN instrument package on a predetermined route from the southwest to the northeast boundaries of the study area and performed transections through the parking lots (see Figure 22.3). Like the stationary monitors, the CAPTEN instrument package captured data three hours before the game, during the game, and immediately following the game. We also captured our path with a GoPro camera and GPS to record any notable “spikes,” which we could later reference to determine location and cause.

Results from initial study

Data were collected successfully over three games during the 2015 football season. After collection, data were downloaded with instrument-specific software and then transferred to Microsoft Excel spreadsheets. Data points that measured every second were averaged to every minute to simplify interpretation.

Stationary measurement

To examine pollutants with the stationary monitors, we averaged the data points over three periods throughout the collection period (i.e., three hours before game, or tailgating; the game itself; and three hours post-game). The data points were then “mapped” (see Figure 22.4) and wind direction was noted so we could isolate event-specific affects as much as possible (examining downstream monitors compared to upstream). Figure 22.5 shows the map and pollutant levels of the monitors surrounding the stadium and the pollutant variation over the course of a sampling period. Looking at our data over three games, tailgating activity and the entering traffic for the game showed “good-to-fair” air quality overall (i.e., levels < 300,000 ppm). During the game,

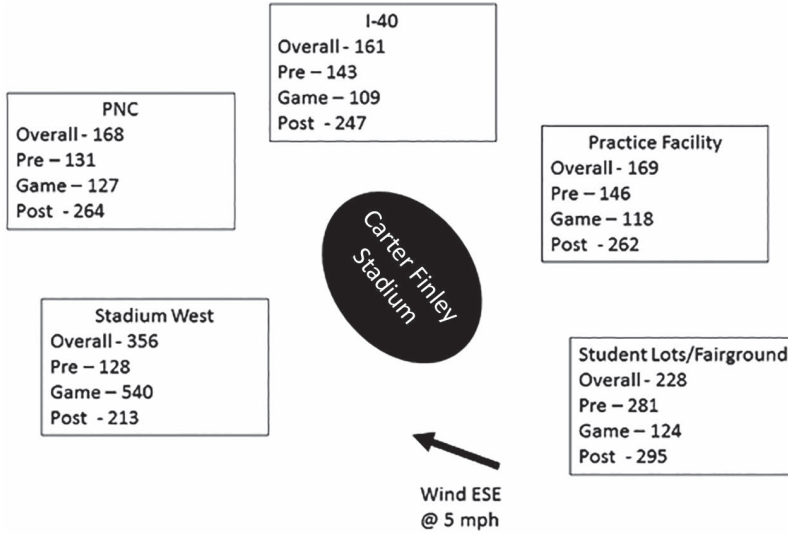


Figure 22.4 Map of the five stationary monitors with pollutant measures averaged (counts above 300 indicated poor air)

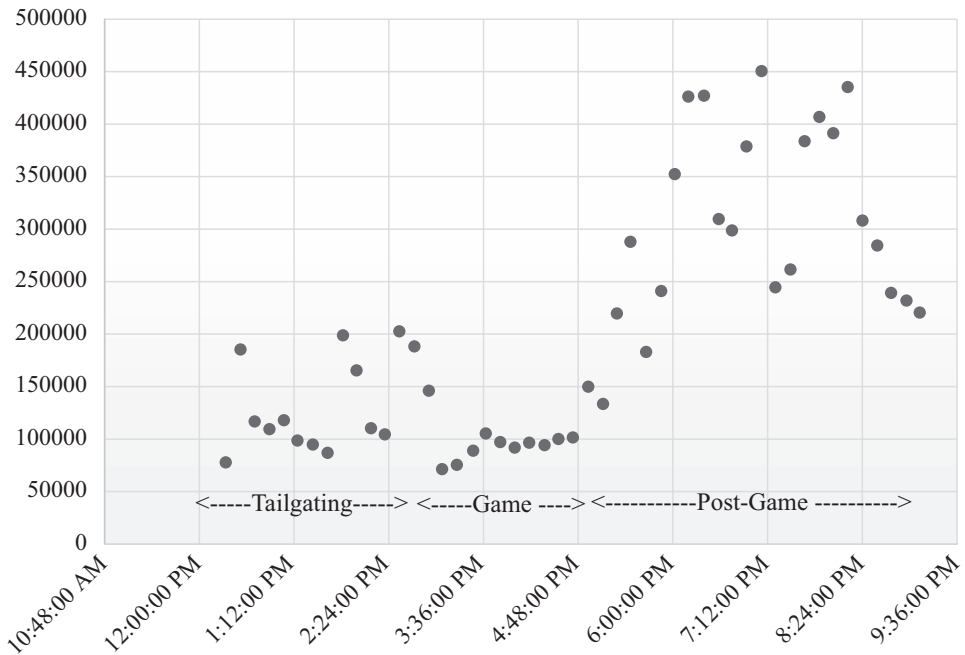


Figure 22.5 Example Dylos collection from one stationary monitor (counts above 300,000 indicate poor air)

the levels were even lower as the auto traffic and tailgating activity was low. Our most significant finding is that air pollution levels *do* become a health concern once the game ends (i.e., post-game). During this period, most people are looking to exit the stadium and the resultant traffic congestion causes air quality to reach “poor” levels.

Table 22.2 Example of data collected with CAPTEN showing “spikes” of high pollutant level occurrences and suspected causes

Time	Cause	PM _{2.5}	CO	CO ₂
1:04	Generator	18.57	6.01	422.46
1:06	Generator	44.357	6.09	423.36
1:24	Large grill	78.57	6.51	429.46
1:43	Smelly generator	557.123	6.08	426.24
1:44	Smelly generator	131.786	6.31	426.42
1:49	SUV	309.286	6.49	422.44
1:52	Generator	7.857	6.96	417.48
1:57	Grill	330.357	5.779	412.38
2:00	Generator	9.643	6.58	419.4
2:10	Propane grill	7.14	5.867	411.38
2:14	Generator	102.857	5.92	412.38
2:15	Generator	53.54	6.04	416.5
2:16	Generator	38.571	6.11	418.56
2:39	Generator	21.429	7.15	419.48
2:42	Grill	5.357	7.15	436.48
2:45	Small grill	16.071	5.879	422.36

Note. CO > 4.5 considered moderate, 10.1–12.49 considered unhealthy for sensitive groups, and > 12.5 considered unhealthy; PM_{2.5} > 12.0 considered moderate, 35.1–54.9 considered unhealthy for sensitive groups, and > 55.0 considered unhealthy.

Mobile measurement

To examine individual-level exposure, we deployed the CAPTEN instrument for all home games during the 2015 season. Due to inclement weather during the first three games, we were unable to collect air pollution data for those games. For the three games without rain, we collected and analyzed CO, CO₂, relative humidity, temperature, ozone, and particulate matter. We deployed the backpack three hours before the game in the tailgate area, during the game in the stadium, and while we exited the stadium to our vehicle.

The results of monitoring are provided in Table 22.2. Overall, all instruments indicated the air quality was “fair” during each of the tailgates and “good” inside the stadium. However, we did see some spikes in CO and CO₂ and statistically significant spikes in PM_{2.5}. The spikes were predominately associated with one of four things: flowing traffic, idling vehicles, generators (particularly older generators), and charcoal grills. Each one of these is concerning due to the fact that we observed multiple tailgaters standing in front of generators, idling vehicles, and charcoal grills over the course of several hours.

Practical implications

The results of this preliminary investigation show that there is a need to account for air pollution associated with major sport events and efforts made to reduce and avoid pollutants, especially for those with health issues (such as those prone to heart attacks or asthma). To address these issues, several simple strategies proposed next represent a good starting point. Additionally, we offer a set of more comprehensive tools requiring additional time, strategic coordination, and even policy change.



Figure 22.6 Valet bike parking program at Levi's Stadium ("Valet Bike Parking" by Silicon Valley Bicycle Coalition is licensed under CC BY-SA 3.0 US)

Simple steps

Because carbon emissions from fan transportation are a major contributor to the air quality at major sport events, steps that can be taken to reduce these emissions include encouraging ride sharing, the use of public transportation, and even biking and walking (Orts & Spigonardo, 2013). For example, Levi's Stadium, home of the San Francisco 49ers, offers a bike valet where game attendees who bike to the stadium can park their bike for free, while volunteers ensure its security during the game (see Figure 22.6).

To reduce the number of vehicles at stadium lots and encourage public transportation use, the North Carolina State University bus system, the Wolfline, created a special bus route, the Red Terror, where students and the public can get to and from the stadium. The Red Terror begins at the stadium from the main university campus, has multiple stops on the way to the stadium, and runs continuously over game day.

Idling

The stationary monitors in our preliminary study found that the highest pollutant levels (over a long period) were due to the mass exodus of all the fans leaving the stadium around the same time, getting in their cars, and then idling their engines while waiting for traffic to the stadium area. Additionally, in tailgating areas, pollution spikes were associated with idling vehicles.

Reducing pollution and waste from idling vehicles has become a major environmental priority and cutting back on idling dramatically reduces emissions of carbon dioxide, nitrogen oxides, carbon monoxide, and particulate matter (Orts & Spigonardo, 2013). To this extent, there has recently been some momentum. Idle Free programs at sport stadiums, initiated by the Certification for Sustainable Transportation at the University of Vermont (see www.erating.org/), is aimed at staff, fans, and area transportation providers. The programs can be fairly simple, making people aware of when and where idling can be avoided and demonstrating how individuals and organizations save fuel, save money, and reduce environmental impacts (Kestenbaum, 2016).

The Idle Free programs include:

- outreach and education materials to demonstrate the importance of exhaust reduction
- working with transportation providers to have idle free policies
- providing idle free zones in and around stadiums

- hosting “Idle Free” tailgating events
- developing mode-choice campaigns (highlighting alternative transportation options)
- providing shore power or waiting areas for drivers
- making “Idle-Free” trainings available to staff, fans, or external transportation service providers.

Part of the Idle Free certification is that teams and organizations can brand themselves as an “Idle Free Team.”

Click and Park

Click and Park is a pre-paid “print at home” parking pass available for event parking. Event attendees choose and pay for their parking ahead of time to reduce the idling that typically occurs while queuing, paying for, and finding a parking spot on arrival. In an effort to reduce idling, Florida Citrus Sports, a nonprofit organization that works with Citrus Bowl Stadium in Orlando, reported that it used to have lines of cars trying to park 15 minutes after kickoff. With the adoption of the Click and Park system, all but late arrivals are in their seats 30 minutes before the game starts. As a side benefit, concession stand sales rose 34 percent. Click and Park has worked with three Olympics events in the United States (Atlanta and Salt Lake City) and Canada (Vancouver), NFL Super Bowls since 2005, and the NCAA (Orts & Spigonardo, 2013).

Conclusion

This chapter demonstrated the methodology to measure air pollution in an outside stadium and its associated tailgate areas. Although replication of this study is not possible without the proper instrumentation (which can be very expensive), alternative low-cost instruments can be used if air quality is a concern. Our data from college football games show that while in the stadium grounds and lots, those sensitive to health conditions due to air pollution should take caution and avoid generators, coal-powered grills, and idling vehicles while also recognizing that air pollution is poorest after the game due to traffic congestion. Lastly, the data provide some evidence for strategies for avoidance (e.g., no idling zones), reduction (e.g., use of newer generators), and operational policy (e.g., Click and Park).

References

- Adams, H. S., Nieuwenhuijsen, M. J., Colvile, R. N., McMullen, M. A. S., & Khandelwal, P. (2001). Fine particle (PM 2.5) personal exposure levels in transport microenvironments, London, UK. *Science of the Total Environment*, 279, 29–44.
- Anderson, J. O., Thundiyil, J. G., & Stolbach, A. (2012). Clearing the air: A review of the effects of particulate matter air pollution on human health. *Journal of Medical Toxicology*, 8, 166–175.
- Bell, M. L., Ebisu, K., Peng, R. D., Samet, J. M., & Dominici, F. (2009). Hospital admissions and chemical composition of fine particle air pollution. *American Journal of Respiratory and Critical Care Medicine*, 179, 1115–1120.
- Bell, M. L., Peng, R. D., Dominici, F., & Samet, J. M. (2009). Emergency hospital admissions for cardiovascular diseases and ambient levels of carbon monoxide: Results for 126 United States urban counties, 1999–2005. *Circulation*, 120, 949–955.
- Brook, R. D., Rajagopalan, S., Pope, C. A., Brook, J. R., Bhatnagar, A., Diez-Roux, A. V., . . . Kaufman, J. D. (2010). Particulate matter air pollution and cardiovascular disease: An update to the scientific

- statement from the American Heart Association. *Circulation: Journal of the American Heart Association*, 121, 2331–2378.
- Bsales, N., & Sarkis, K. (n.d.). Tackling carbon pollution from sport fans. *Terrapass*. Retrieved from www.terrapass.com/general/tackling-carbon-pollutions-sports-fans/
- Collins, A., & Flynn, A. (2008). Measuring the environmental sustainability of a major sporting event: A case study of the FA Cup Final. *Tourism Economics*, 14, 751–768.
- Delaney, T. (2008). The social aspects of sports tailgating. *The New York Sociologist*, 3, 1–10.
- Environmental Protection Agency. (2013). *Integrated Science Assessment for ozone (O3) and related photochemical oxidants*. Retrieved from http://ofmpub.epa.gov/eims/eimscomm.getfile?p_download_id=511347
- Jiao, W., & Frey, C. H. (2014). Comparison of fine particulate matter and carbon monoxide exposure concentrations for selected transportation modes. *Transportation Research Record*, 2428(2), 54–62.
- Kestenbaum, D. (2016, June). *Vehicle exhaust and reduction strategies – How can we minimize outdoor pollutants?* Paper presented at the 2016 Green Sports Alliance Summit, Houston, Texas.
- Koerner, B. (2009, April 9). Are the Yankees bad for the environment? The hidden costs of heading to the stadium. *Slate*. Retrieved from www.slate.com/articles/health_and_science/the_green_lantern/2007/10/are_the_yankees_bad_for_the_environment.html
- NCAA. (2016). *2016 national college football attendance*. Retrieved from http://fs.ncaa.org/Docs/stats/football_records/Attendance/2016.pdf
- Orts, E., & Spigonardo, J. (2013). *Special report: The green sports movement*. Initiative for Global Environmental Leadership, University of Pennsylvania. Retrieved from <http://d1c25a6gwz7q5e.cloudfront.net/reports/2013-12-13-Greening-the-Sports-Industry-R3.pdf>
- Rhodes, M. T. (2013). *Pigskin, tailgating and pollution: Estimating the environmental impacts of sporting events* (Working Paper Series No. 13–19). Greensboro, NC: University of North Carolina at Greensboro.
- Weinmayr, G., Romeo, R., De Sario, M., Weiland, S. K., & Forastiere, F. (2010). Short-term effects of PM10 and NO2 on respiratory health among children with asthma or asthma-like symptoms: A systematic review and meta-analysis. *Environmental Health Perspectives*, 118, 449–457.
- Williams, M. L., Atkinson, R. W., Anderson, H. R., & Kelly, F. J. (2014). Associations between daily mortality in London and combined oxidant capacity, ozone and nitrogen dioxide. *Air Quality, Atmosphere, and Health*, 7, 407–414.

STOKE CERTIFIED

Initiating sustainability certification
in surf tourism*Danny O'Brien and Jess Ponting*

The sport of surfboard riding (surfing) has undergone major growth in participation in recent decades. Estimates of global surfing participation range from 23 million (International Surfing Association cited in Warshaw, 2004), to 25 million (Aguerre, 2009), through to 35 million participants (O'Brien & Eddie, 2013) in at least 161 countries (Martin & Assenov, 2012). Of course, with this growth in participation has come growth in surfing's economic value as increasing numbers of enthusiasts become consumers of surfing hardware, apparel, and associated goods and services. Back in 2002, the sport was estimated to generate more than US\$10 billion per annum (Buckley, 2002a, 2002b). Given the continued growth in surfing participation and its associated surfing economy since 2002, we can safely assume the economic worth of the global surf industry now far exceeds Buckley's earlier estimates. Although surfing hardware and apparel form the core of consumer interest, researchers cite surfing tourism as a major contributor to this economic activity (Barbieri & Sotomayor, 2013; Dolnicar & Fluker, 2003; Martin & Assenov, 2012; Ponting & McDonald, 2013; O'Brien & Ponting, 2013; Ponting & O'Brien, 2014).

Surfing and travel have always been synonymous, and surf tourism is an established niche in the sport tourism sector (Buckley, 2002a, 2002b; Martin & Assenov, 2012; O'Brien & Ponting, 2013; Ponting & McDonald, 2013; Ponting & O'Brien, 2014), which is itself a significant niche of the wider global tourism industry (Hritz & Ross, 2010). Surf tourism revolves around relatively affluent, mostly Western surfers traveling to remote corners of developing countries with the imperative of riding uncrowded waves and experiencing unique cultures (Dolnicar & Fluker, 2003; Martin & Assenov, 2012; O'Brien & Ponting, 2013; Ponting & O'Brien, 2014). Clearly, this type of sport tourism has the potential to drive new economic development opportunities in these isolated regions. However, due to the high-frequency, low-yield business models that have characterized surf tourism in recent decades, the impacts on host communities have typically been deleterious and, in some cases, catastrophic (Buckley, 2002a, 2002b; Ponting, 2008; Ponting et al., 2005). Indeed, surfers' predilection for venturing off the beaten track and into isolated regions prompted Ponting et al. (2005) to describe surf tourism as "a colonizing activity," which has nudged unprepared destinations "down the slippery slope to large scale industrialized tourism and its related issues" (p. 152).

As a reaction to these typically negative impacts, the sector has attracted significant media and scholarly interest in recent years, with Barbieri and Sotomayor (2013) suggesting that surf

tourism is “generating sufficient economic, social and environmental significance to justify academic attention” (p. 112). Interestingly, in recent years, there has been a shift in values towards an expectation of the industry needing to “give back” rather than take away from the communities that host surf tourism (Martin & Assenov, 2012; O'Brien & Ponting, 2013; Ponting & O'Brien, 2014; Towner, 2016). Indeed, most adherents who embrace surfing's inherent adventure, freedom, action, and aesthetic care deeply about the iconic and sometimes “secret” places that form the basis of their pursuit. Three-time world professional surfing champion, Mick Fanning, reflected the growing expectation for the sport to “give back” when he stated that,

There's no doubt about it . . . We travel to some of the most beautiful places on earth and surf the greatest waves in prime season with just one other person. We also see a lot of pretty radical poverty, often butted up hard against the idyllic beach lifestyle we enjoy . . . I do believe this job carries with it a certain amount of responsibility to give something back to the places we visit.

(Fanning & Baker, 2011, p. 89)

This expectation in the surfing community of the need to “give back” to host communities has risen in tandem with growing awareness of humanity's impact on the environment. Butt (2015) notes that surfers are especially aware of the looming environmental crisis:

The effects of environmental degradation, including the effects of global warming induced by carbon emissions, will probably be more immediate and more profound on us surfers than on other members of the rich nations of the world. We are more sensitive to things like sea-level rise, storminess, coastal flooding and coastal pollution because we spend our lives right there, on the coast – on the “front line.”

(p. 200)

Although sustainability is clearly situated right in the “wheelhouse” of surfers, there is also ample evidence of increasing concern over sustainability issues in the wider sporting and business communities. Indeed, the need to be mindful of the social and environmental consequences of sporting pursuits and to generate positive legacies while minimizing negative impacts has been at the core of corporate social responsibility initiatives in sport. Referring mainly to environmental corporate social responsibility initiatives in professional sport, Trendafilova, Babiak, and Heinze (2013) claimed that “these practices are now not only acceptable, but expected in the sport industry by both internal and external stakeholders, including employees, customers/fans, professional bodies, and society at large” (p. 310). Thus, corporate social responsibility has become institutionalized as an integral aspect of how sport is packaged and delivered. An established body of research is exploring how professional sport teams have responded to the sustainability challenge. However, a gap remains in our knowledge as to how stakeholders in sport tourism, particularly those in sports like surfing that rely on nature-based resources in sensitive regions, go about confronting the sustainability challenge.

This chapter explores the case of STOKE Certified, the first sustainability management and accreditation system to be developed specifically for the surf tourism sector. First, a brief literature review on surf tourism and tourism certification programs is presented; then, the emergence of STOKE Certified is explored and discussed in the context of this literature.

Theoretical background

Surf tourism

Surf tourism is founded upon focal regions' nature-based surfing resources such as beaches and natural reef ecosystems. As surfers increasingly seek to escape the overcrowding and "surf rage" that is now common at popularized surfing breaks in developed countries, they seek opportunities for uncrowded "authentic" experiences, and thus venture further and further from mainstream tourism destinations (Barbieri & Sotomayor, 2013). Developing countries such as Papua New Guinea, the Philippines, Indonesia, Sri Lanka, the Maldives, Taiwan, Mexico, and destinations across Asia, Africa, the Pacific Islands, and Central and South America all support well-established surf tourism sectors (O'Brien & Ponting, 2013; Ponting et al., 2005). However, due to deficiencies in leadership and mechanisms for strategic planning, surf tourism has more often led to negative social and environmental impacts, with few economic benefits for host communities (Buckley, 2002a, 2002b; Ponting et al., 2005; Towner, 2016).

Researchers have explored surf tourism and sustainability in various national contexts such as Fiji and the Pacific Islands (Buckley, 2002a, 2002b; Ponting & O'Brien, 2014), Papua New Guinea (Abel & O'Brien, 2015; O'Brien & Ponting, 2013), Indonesia (Ponting, 2008; Ponting & O'Brien, 2015; Towner, 2016), the Maldives (Ponting, 2014), and Thailand (Martin & Assenov, 2012). O'Brien and Ponting (2013) noted that, "With much of the world's commercial surf tourism taking place in remote corners of developing nations, the challenges of sustainability are particularly salient" (p. 159). A key theme running through this body of work is that host communities are almost universally left as "bystanders," forced to watch as foreign-owned commercial operations exploit their nature-based resources for surf tourism development and financial gain. The only exception to this has been in Papua New Guinea, where the national sport governing body, the Surfing Association of Papua New Guinea (SAPNG), has instituted formalized surf management plans that enshrine the rights of host communities to manage their own surfing resources (Abel & O'Brien, 2015; O'Brien & Ponting, 2013).

Whereas the SAPNG approach is founded upon community participation with formalized mechanisms for consultation, education, planning, and development, other countries have no such agencies to provide leadership, strategic direction, and oversight, much less to encourage local participation in the sport. Indeed, research has shown that surf tourism in developing countries is more often controlled by foreign investors and characterized by indifferent government involvement with only marginal benefits reticulating back to local communities (Ponting & O'Brien, 2014, 2015; Towner, 2016). In the Indonesian context, Towner (2016) suggests this lack of government support is a major barrier to local participation in the industry, and Ponting and O'Brien (2014, 2015) note similar scenarios both in Indonesia and Fiji.

In lieu of the widespread lack of government support for local involvement in surf tourism, there is a recognized need for tourism-specific education and training. Despite the challenges this presents, Towner (2016) argues that industry-specific education and training will engender more community participation and therefore, more sustainable benefits for hosts. O'Brien and Ponting (2013) and Abel and O'Brien (2015) demonstrated the worth of this approach in Papua New Guinea, where high levels of host community participation in surf tourism led to positive and sustainable outcomes across economic, sociocultural and environmental parameters.

Tourism accreditation and certification programs

Notwithstanding empirical evidence that host community participation in surf tourism helps to engender sustainability, such participation requires passionate and ongoing leadership. This leadership can come from the industry itself, as is the case in Papua New Guinea, or from central or regional government. However, the fact remains that, excluding Papua New Guinea, surf tourism in developing countries is characterized by government indifference and the absence of unified, consultative strategic planning. This means that the leadership, support, education, and training required for engendering community participation and delivering sustainable surf tourism is simply not present (Towner, 2016).

In the wider tourism industry, although government support has been more forthcoming, and training and education programs more commonplace, they remain comparatively patchy in developing countries, where most surf tourism takes place (Saufi, O'Brien, & Wilkins, 2014). However, with long-established and larger corporate actors involved in mainstream tourism, the issue of sustainability has been on the industry's agenda for decades. To help assuage tourism's damaging environmental and social impacts, formalized programs aimed at accreditation and certification of certain tourism products emerged as far back as the 1980s (Melo & Wolf, 2005). In explaining the nature of certification and accreditation schemes, Esparon, Gyuris, and Stoeckl (2014) note that "[c]ertification emphasizes performance in the domains of 'people, planet and profits' and ensures that sustainability criteria are satisfied by certified businesses. Certification identifies 'responsible' enterprises so that consumers wishing to make ethical choices can do so" (p. 148).

And of course, although commercial surf tourism is a relatively recent phenomenon, coastal tourism along the English Channel, the North Sea, the Atlantic coast of the United States, the Mediterranean coast, and the Hawaiian Islands has been in existence since the late 18th century (Gormsen, 1997). This type of coastal tourism

is based on the use and consumption of biophysical factors, turning a natural resource into a social and economic value. The interface between the sea and the land is the preferred zone for recreational activities, with the beach as the main space and the focal point for a whole range of tourist attractions.

(Fraguell, Martí, Pintó, & Coenders, 2015, p. 1)

In European coastal destinations, Fraguell et al. (2015) report that beach use by tourists is unprecedented. They argue that this demand, along with increasing levels of environmental awareness, has created the need for high-quality beaches and a consequent aim for most destinations to seek formalized quality accreditation. And indeed, there is strong empirical evidence that certified sustainable tourism products are more attractive to consumers than non-certified ones (Esparon et al., 2014). On this point, Buckley (2001) notes that the main function of accreditation schemes is in influencing consumer choice through the branding power of the ecolabel associated with the particular program. He points out that this branding power is a function of whether the label is "accepted by tourists as meaningful, reliable, and useful in choosing individual products" (Buckley, 2001, p. 185). This speaks to the legitimacy of the focal scheme in the eyes of both operators and consumers. Legitimacy in this context is a function of how clear, yet comprehensive, the criteria used to distinguish between compliant and non-compliant products are, as well as the extent to which independence can be ensured for assessment and audit (Buckley, 2001).

Empirical evidence for the role of third-party accreditation in creating conditions for positive economic, social, and ecological impacts is well documented (Black & Crabtree, 2007; Font & Buckley, 2001). Thus, in a developing country context, in lieu of sufficient government support or local leadership of relevant education and training programs, a well-constructed certification program may fulfill somewhat of an educative function for practitioners in terms of sustainability guidelines. Equally, once established, such a program would provide a benchmark for consumers to compare one operator to another in terms of overall accredited versus non-accredited status; it would also provide a foundation for comparisons among accredited operators on performance in relation to the various sustainability criteria. However, surf tourism is characterized by many small providers located in remote corners of developing countries throughout the world; thus, establishing a sustainability accreditation scheme in a niche sector like this is profoundly challenging. The remainder of this chapter documents how one newly formed accreditation initiative has gone about confronting these challenges.

Surf tourism and the sustainability challenge: confronting the paradox

As a result of surfers' preference for uncrowded conditions, the overwhelming majority of surf resorts are very small operations, typically only catering to a maximum of 10 to 16 guests at a time. Exceptions to this exist in Hawaii, Bali, and the Maldives, where more mainstream resorts rely on surfers for a significant percentage of their revenues (Ponting, 2014). Nonetheless, surf resorts are always located in fragile coastal areas. In addition, they are often located in remote, rural regions of developing countries adjacent to indigenous communities facing cultural decline with very real economic development issues (Abel & O'Brien, 2015; Ponting, 2008; Towner, 2015). In essence, whereas surf resorts are typically well placed to provide significant positive impacts for their local environment and adjacent communities, due to their isolation and small size, they are not economically viable clients of sustainability certification programs in mainstream tourism.

Therefore, the surfing landscape is characterized by a major paradox. On the one hand, the majority of surfers value the beauty and serenity of the natural environment and the often "wild" places within which the sport takes place. At the same time, surfers' ever-increasing appetite for surf travel relies on the extensive use of greenhouse gas-producing air, land and sea transportation. Added to this, much of the hardware used to actually participate in the sport, such as surfboards, legropes, and wetsuits, actually derive from unsustainable petrochemicals and plastics. Indeed, Hulet (2006) observed that:

We first-world surfers are selfish beasts. We're comparatively wealthy, generally spoiled, and white bread right down to our socks. When we elephant tromp through the global surfscape, sometimes life springs from our footprints, but more often, we just leave a filthy divot.

(p. 128)

A natural response to help address this inherent paradox would be for surf tourism providers to sign up to one of the numerous sustainable tourism certification programs. The problem here is that most certifications are uninterested in resorts or hotels with less than 100 rooms unless they are extremely high-end properties. It is, therefore, quite predictable that none of the sustainable tourism certification programs, which peaked in number at around 200 in the early

2000s before consolidating at around 80 in recent years (G. Bauer, personal communication, 2015), have achieved any penetration at all into the surf tourism industry. It is this paradox in surf tourism that the Center for Surf Research (CSR) at San Diego State University first sought to address by exploring the feasibility of a surf tourism-specific sustainability certification program.

Creating the case for certification

To get sufficient buy-in from industry practitioners, the case for sustainability certification in surf tourism as a viable business decision had to be made. There is ample empirical evidence of unsustainable practices in the surf tourism industry (Buckley, 2002a, 2002b; Ponting, 2008; Ponting & McDonald, 2013; Towner, 2015). However, despite work by Dolnicar and Fluker (2003) and Barbieri and Sotomayor (2013) on surf tourists' travel preferences and consumer behaviors, no empirical studies specifically address surf tourists' attitudes towards, and behaviors relating to, sustainability issues.

In response, in 2015, the CSR instigated a survey to address this lack of empirical data. The online survey consisted of 44 questions covering a range of issues including sustainability in surf travel and was live on the Qualtrics survey platform for two months. Participation was incentivized via a prize draw of a Firewire brand surfboard of the winner's choice. A snowball sampling approach was taken utilizing social media networks and those of the CSR. In total, 3,049 surveys were attempted yielding 2,994 viable responses (although this varies a little between questions, as answering each question was not mandatory) from 68 countries of origin. Of these, 60 percent of respondents use surf forecasting websites at least daily, and 85 percent use them at least weekly. The vast majority of responses were from the United States (55 percent), followed by Australia (18 percent), France (4 percent), Germany (3 percent), the United Kingdom (3 percent), Spain (2 percent), New Zealand (2 percent), and Canada (2 percent). Sweden, South Africa, Portugal, Netherlands, Mexico, and Brazil represented 1 percent of responses each, and respondents from another 54 countries filled out the remaining responses with proportions of less than 1 percent apiece.

The sample was 80 percent male with an average age of 34 and more than 10 years of surfing experience, surfing three times per week, owning four surfboards, and with a mean annual household income of US\$75,000. Seventy-four percent ride shortboards most of the time. Sixty-four percent also ride longboards, although this is the main mode of surfing for only 27 percent. Whereas 27 percent of respondents also ride stand-up paddleboards periodically, it is the main surfcraft for only 6 percent of respondents. On average, the sample had traveled to three to five different countries specifically to surf between one and five times over the past five years, spending an average of \$2,500 on trips of 8 to 14 nights duration. Sixteen percent of the sample had made more than six international trips in the past five years, and 2 percent had made more than 20 international surf trips in the same period.

The results of the survey were preliminarily reported at the Inaugural Conference of the International Association of Surfing Academics, known more colloquially as the Sustainable Stoke Conference, at San Diego State University in September of 2015. The survey data suggest that the respondents generally hold attitudes that reflect an interest in sustainability issues. For example, as shown in Figure 23.1, only 28 percent agree that the surf industry is doing enough to ensure its products are sustainable. Only 40 percent of respondents believed that sufficient support is being given to environmental and humanitarian organizations in surfing destinations by the surf industry. If price and performance were comparable, 92 percent of the sample would buy a surfboard made from sustainable materials over one that was not.

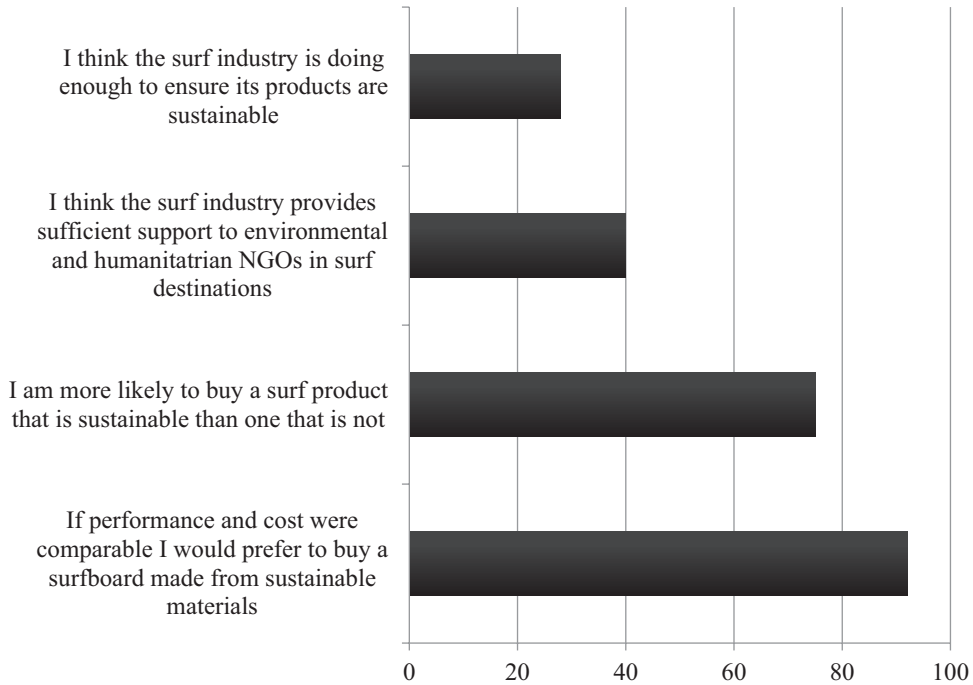


Figure 23.1 Percentage of respondents who strongly disagree or strongly agree with statements about sustainability in the surf industry ($n = 2720$)

The survey also sought to determine the sample’s willingness to pay various percentages over and above comparable prices for sustainable surf and sustainable surf tourism products (see Figure 23.2). The following graph summarizes the sample’s responses to this item. The data suggest that up to 75 percent of surfers are willing to pay a premium of at least 10 percent for sustainably produced products.

The CSR survey also explored attitudes and behaviors specifically relating to sustainability in surf tourism and related decision-making processes (see Figure 23.3). Given that surf tourism is driven by surfers’ desire to experience uncrowded surf in the context of exotic locations and unique cultures (Dolnicar & Flucker, 2003), it is somewhat predictable that wave quality, cost, crowding, and culture ranked as the top four items in importance. What was interesting was that environment and the sustainability of the travel businesses being utilized rank fifth and sixth in importance ahead of safety, travel time, and quality of accommodation. Clearly, issues relating to regional ecological health in the destination, and an understanding of the sustainable practices of focal surf travel operators, are of high importance to survey participants.

Figure 23.4 summarizes the results of nine questions in which respondents were asked to rank on a five-point Likert scale (with 1 representing “strongly agree” and 5 representing “strongly disagree”) their level of agreement with statements relating to surf tourism sustainability. The survey also asked questions about participants’ attitudes in relation to various aspects of surf travel, including the businesses involved and their own research and purchasing behaviors. The results show high levels of concern about sustainability in surf travel. Although there was a significant decline between statements of concern about sustainability (most of which were above 90 percent) and past and future purchasing decisions based on that concern, more than

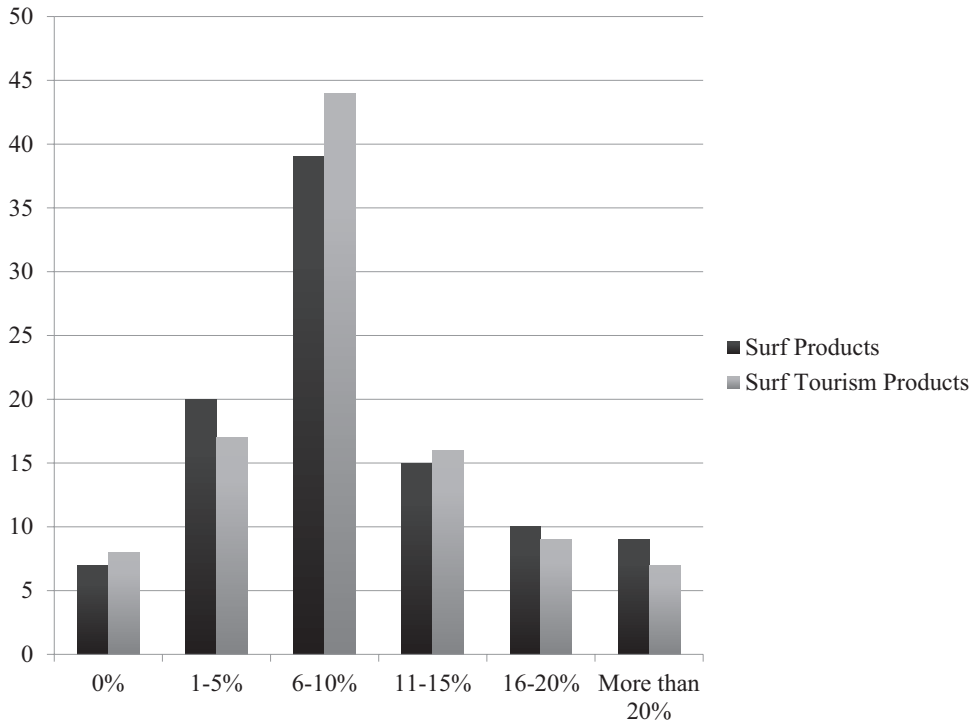


Figure 23.2 Willingness to pay over and above market price for sustainable surf and surf tourism products ($n = 2720$)

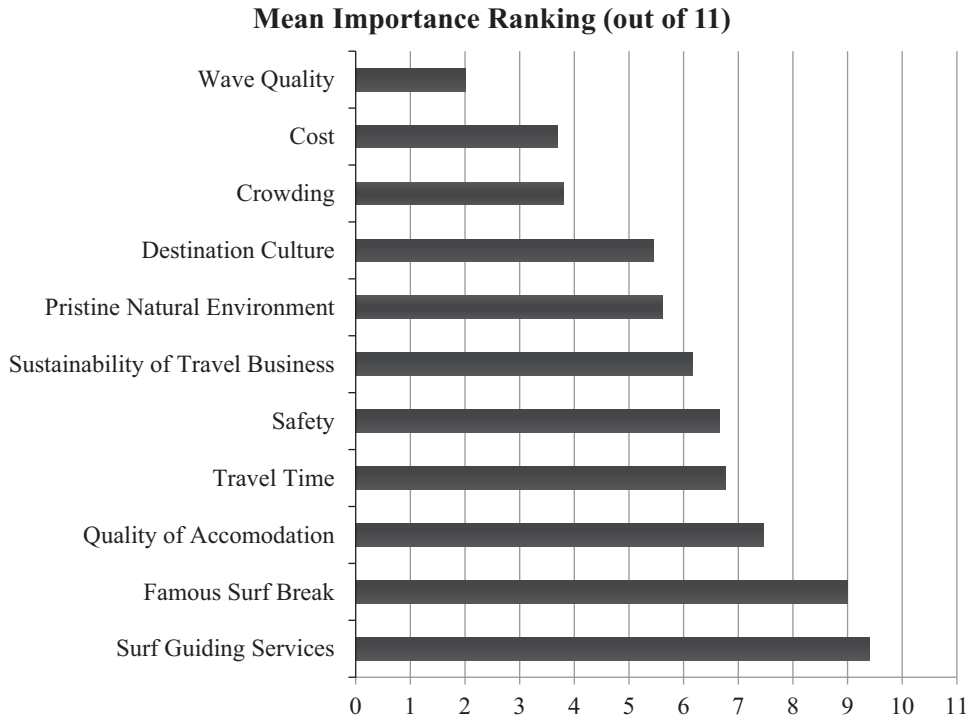


Figure 23.3 Mean importance ranking in surf tourism decision-making processes ($n = 2720$)

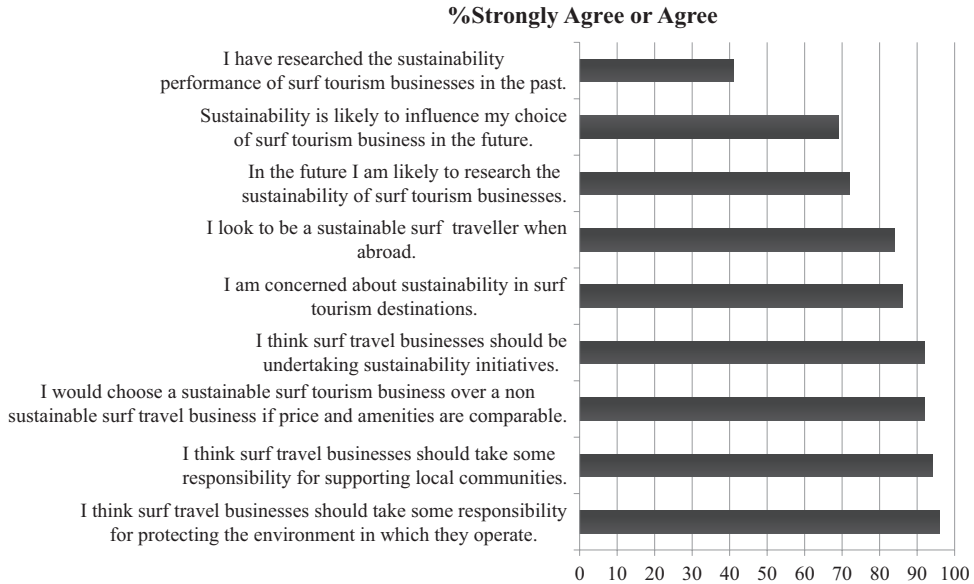


Figure 23.4 Responses to surf tourism sustainability statements (n = 2720)

40 percent had researched the sustainability of surf tourism providers in the past, and 69 percent of participants agreed or strongly agreed that sustainability performance would influence their choice of surf tourism provider in the future.

Creating STOKE Certified

The survey results reported earlier stem from data collected in 2015; however, the CSR began exploring a sustainability certification program for the surf tourism sector in 2011. In 2014, a former student of the center established the STOKE Certified sustainability certification for surf resorts using the Global Sustainable Tourism Council’s (GSTC) certification criteria as a starting point. Over a period of two years, a standard built on the GSTC’s criteria was developed into a comprehensive set of performance indicators specific to the idiosyncracies of surf resorts, which generally have a small number of rooms; are in fragile coastal and marine environments; are often adjacent to marginalized indigenous communities; and are based on a resource that can easily become overcrowded and, therefore, devalued. These performance indicators were “ground truthed” and tested with five pilot properties in Hawaii, Indonesia, Costa Rica, and two in Fiji. In addition to the development of context specific indicators that were derived from the existing GSTC criteria, new context-specific criteria were required for dealing with issues of surf guiding and interpretation, enforcement of surfing etiquette, support for local participation in the sport, and for comprehensive measures to protect coral reef ecosystems where appropriate.

This test period for STOKE Certified performance indicators revealed a number of common issues that pose significant sustainability challenges to surf tourism and, significantly, some useful ways of addressing these issues through a certification mechanism. An initial challenge was effectively communicating the need for sustainability certification to surf tourism operators, as well as surf tourists themselves. With the small scale of operations of most surf resorts, surf tourists may be forgiven for thinking that they “step lightly” in an ecological and sociocultural

sense. However, as mentioned earlier, surf resorts typically operate in delicate coastal ecosystems with local indigenous communities as traditional custodians of the surfing resource. This means that even small-scale surf tourism, with a turnover of 6 to 12 guests every 7 to 10 days, places significant demands on host communities for food, building materials, power, water, waste disposal, and transport (Buckley, 2002a). However, because surf tourists are only ever present for short intervals in relatively small groups, they see only the remoteness; they do not see the cumulative impact of their presence on these destinations. Therefore, from a sustainability certification standpoint, there is the need to communicate to surf tourism operators and tourists themselves that even small-scale surf tourism has ecological and sociocultural impacts, and can indeed benefit from sustainability certification tailored to the industry's peculiar requirements. Put simply, in terms of adoption of surf tourism sustainability certification, as with the wider tourism industry in which adoption rates are patchy (Weaver, 2009), there is a fundamental market penetration problem.

Spreading the STOKE

In addressing this problem of market penetration, STOKE Certified sought means to effectively communicate with surf tourism operators, as well, of course, as current and potential surf tourists. In exploring how eco certification affects tourist purchase behavior, Karlsson and Dolnicar (2016) identified "a niche segment that genuinely cares about eco certification and takes it into consideration when making purchase decisions" (p. 707). Other research has also identified this niche segment, a key characteristic of which is a desire for intense experiences of nature (Dolnicar, Crouch, & Long, 2008). Clearly, surf tourists fit this niche, being on the "front line" of the natural environment (Butts, 2015). Thus, one tactic for STOKE Certified to address its market penetration problem was to create brand awareness and demand among surf tourists which would build pressure on surf tourism operators to meet this demand.

The global surfing population is rather less diffuse than that of the broader traveling public and can, therefore, be reached more easily with messaging about surf resort sustainability certification. In particular, a small number of surfing magazines dominate the major geographical markets. More significantly, an international platform of live webcam services that provides real-time vision of surfbreaks, accurate surf forecasting, and web-based surf news content (e.g., Surfline in the US, Magic Seaweed in the UK, Coastal Watch in Australia) has been a key way of publicizing the virtues of certification. Also, the World Surf League (WSL), the pinnacle of professional surfing, consists of 11- and 10-event men's and women's world tours, as well as a number of developmental and specialty events. The WSL has enormous real-time online and social media reach through its event streaming broadcast platform with additional pay-TV broadcast contracts in the major markets of the United States, Europe, Brazil, Australia, and Japan. Viewership of the 2014 WSL Pipeline Masters was 6.2 million people (Minsberg & Corasaniti, 2015). Meanwhile, the WSL's 2014 Tahiti Pro had a Facebook reach of 58 million people, 1.9 million viewers online combined with 12 million television viewers in Australia, Brazil, Hawaii, France, and Portugal (Stapelberg, 2014). As of July 2016, the WSL has close to 5 million followers on Facebook.

What all of this means for the sustainability certification of surf resorts is that a significant proportion of the world's 35 million surfers read a relative handful of magazines each month, visit at least one of several surf forecasting/news sites daily and weekly, and tune in to view the World Surf League's live streaming of professional competitions. In addition, a constant flow of social media posts across multiple platforms reflects and recycles the best content of each site. Exposure here can quickly establish awareness of particular incidents and stories germane to the surfing world. For example, in 2015, STOKE Certified was able to leverage its relationships

with two surf resorts that host two of the most prestigious contests on the WSL Men's Tour, the Pipeline Masters in Hawaii (Turtle Bay Resort) and the Fiji Pro (Tavarua Island Resort) for on-air announcements concerning the respective resorts' STOKE Certified status and basic details of the program. In Fiji in particular, a minute-long announcement was made during the quarter finals of the event to millions of online viewers. In addition, surf media outlets such as Transworld Business featured articles on the STOKE Certified program itself (Pierce, 2016); on STOKE Certified property, Matanivusi Resort in Fiji (Smith, 2016); and on Matanivusi as one of six companies driving sustainability in action sports through its STOKE Certified accreditation (Smith & Bradstreet, 2016). The profile of STOKE Certified was also raised in the domain of adventure sports when it won the Business Leadership Award at the 2015 SHIFT (an acronym for "Shifting How we Invest For Tomorrow") Festival (SHIFT, 2015).

Therefore, seeding information about STOKE Certified into select WSL event broadcasts and targeted surf media outlets created a level of brand awareness of the STOKE Certified pilot programs at five leading international surf resorts. This exposure led, without solicitation, to an additional four properties becoming members of STOKE Certified for (at the time of writing) a total of nine members in seven countries. These early stages of uptake have highlighted a number of ways in which STOKE Certified is uniquely positioned to act in an intermediary function regarding communication of sustainability issues specific to surf tourism. Primary among these is the imperative to provide cultural and environmental interpretation, both for surf resort operators and guests. Typically, the founders of surf resorts are not hard-nosed business people, but more often, are surfers seeking a means to sustain their surfing lifestyle. Therefore, although sustainability issues are often a passion of these people, the requisite skills required for communicating cultural and ecological literacy to employees, let alone guests, are often deficient. Christie Carter, CEO of Wavepark Mentawai in Indonesia, noted the role that certification has played in highlighting the need to communicate the sustainability imperative to key stakeholders:

Through our engagement with STOKE Certified, we have realized that many of our strengths rely on communicating our policies to our guests, employees, partners, government and community. Moving forward, we are committed to improving how much and how often we communicate with these stakeholders, to make sure that potential synergy between the various parties does not lie dormant.

(personal communication, 2015)

STOKE Certified has assisted operators in communicating the sustainability message to key stakeholders, but there is an even more fundamental problem to overcome in achieving sustainable surf tourism. Despite an awareness of the need for sustainability, the small size of most surf resorts has meant the specialized skillsets required to develop and implement sustainability management systems often do not exist in-house. As a result, sustainability has traditionally not received sufficient attention from management (Towner, 2016). This is all despite the fact that the viability of surf tourism relies as much on a clean environment and good relationships with local communities, as it does on the quality of natural surfing resources (Martin & Assenov, 2012).

It is in the role of educator and trainer that STOKE Certified has been particularly effective in working with accredited properties to develop the skills necessary to implement sustainability management systems. In a doctoral thesis exploring the implementation of STOKE Certified, Findeisen (2015) observed that "[t]hrough the [STOKE Certified] label, an extensive ongoing education for local employees was introduced and all resorts stated that this was one of the main changes that arose with the certification" (p. 3). This educational function has enabled surf resort operators to strategically plan for impact management along economic, social, cultural heritage,

reef ecosystem and other ecological parameters. The general manager of Tavarua Resort, Fiji, Dylan Fish, explained how certification has assisted his operation to go beyond talking about sustainability, to actually formalizing strategic goals around clearly stated sustainability criteria:

In light of our recognition from STOKE Certified and in line with the comprehensive sustainability management system they have helped us develop, we aim to improve in the following areas:

- Develop and implement an interpretive tour that educates our guests about the resort's sustainability initiatives as well as the island's history and environment.
- Invest in renewable energy on site, beginning with solar water heating. In the meantime, we are committed to purchasing carbon offsets until we are able to one day balance our carbon production/sink equation locally.
- Transition our fleet of boats to four stroke engines – our first will be in service June 2015.
- Continue to work with the Mamanuca Environment Society on local water quality monitoring on the reefs surrounding Tavarua – and many other great initiatives.
- Establish and enforce a no-take Marine Protected Area on the reef surrounding Tavarua.
- Work on an ongoing basis with STOKE Certified to improve our sustainability performance across the board and ultimately achieve Best Practice designation. (personal communication, 2015)

Similarly, Scott McCormack, vice president of Real Estate at the Turtle Bay Resort in Hawaii, explained how accreditation helped his organization get closer to realizing their sustainability vision. He also spoke about the potential for STOKE Certified to have positive impacts upstream in their supply chain and downstream in their community:

STOKE Certified has provided us the tools and knowledge necessary to make long-term strategies for achieving best practices as we fulfill our vision for a more sustainable future of Turtle Bay Resort. Moving forward, we will continue to improve our sustainability practices by working with STOKE Certified to formalize and centralize best practice sustainability policies across all departments. Then we will implement these over time throughout our operations and sphere of influence in our supply chain and surrounding community. With STOKE's help we will monitor our progress to ensure we achieve year-on-year incremental improvement, and we will publicly report our performance.

(personal communication, 2015)

It would be wrong to suggest that surf resort operators are completely ignorant of the imperative for sustainability. Rather, operators often just lack the time and resources to convert goodwill into actual strategic activity; but this is where sustainability certification can contribute to positive change in surf tourism. One operator observed that "STOKE was able to come in and get everything down on paper and implement policies for us – formally, in writing I guess you would say. So we got much better organized with their help" (Christie Carter, Mentawai Wavepark, quoted in Findeisen, 2015, p. 3). Similarly, another operator in Fiji described how STOKE Certified helped formalize his operation's approach to sustainability:

The STOKE Certified program has been very helpful in taking a methodical, structured, and comprehensive view of our sustainability approach and helping us re-work

it in the most cost effective yet impactful manner possible. We invite other surf resort operators to take a look at STOKE and see how they can help implement sustainability initiatives resulting in better outcomes for everyone.

(D. Fish, personal communication, 2015)

Concluding discussion

This chapter has documented the embryonic stages of a coordinated effort to address significant sustainability issues in the sport of surfing, and specifically, surf tourism. This significant niche sector has evolved in which time-poor, cash-rich Western surfers utilize commercial tourism infrastructure for travel to remote corners of developing countries to enjoy short-stay vacations in surf camps/resorts that are typically run by fellow surfers, themselves often Western ex-patriots. The host communities in these regions have traditionally been marginalized from any benefits accruing from surf tourism, despite being the traditional custodians of the land and coastal resources upon which surf tourism relies. Worse, in many cases, surf tourism has actually exacerbated economic, ecological, and sociocultural problems in host communities. For these reasons, the majority of scholarly research in surf tourism has focused on issues related to the inequitable, unsustainable business models that have characterized the sector (O'Brien & Ponting, 2013; Ponting et al., 2008; Ponting & O'Brien, 2014, 2015; Towner, 2016). What became clear from this work is that a coordinated approach to addressing the crippling sustainability issues prevalent in surf tourism was needed; this need motivated the case for sustainability certification in surf tourism and, ultimately, the birth of STOKE Certified.

Saufi et al. (2015) noted that in developing countries, where the majority of surf tourism takes place, mechanisms for tourism training and education are “patchy” when compared with developed countries. The introduction of STOKE Certified has gone some way to redressing this patchiness by educating resort owners/managers about what sustainability actually is and how it can be implemented in a comprehensive and systematic way. Sustainability certification has enabled vague notions of goodwill to be transitioned into strategic action as managers now have a framework around which to develop and formalize sustainability policies into a comprehensive sustainability management system. Thus, in a practical sense, there are now customized solutions for issues such as renewable energy, waste disposal, coral reef protection, and water reticulation. And, as Esparon et al. (2014) noted, certification identifies “responsible” operators so that guests wishing to make ethical choices, can now do so.

By its very nature, a surf tourism-specific sustainability management system must rely upon the involvement of local communities because the ongoing viability of any given operation relies as much on respectful relationships with local communities as it does on the quality of natural surfing resources (Ponting & O'Brien, 2014, 2015; Towner, 2016). STOKE certification highlights the importance of surf resort personnel engaging with local communities to provide environmental and cultural interpretation for guests. In this way, certification propagates the sustainability story of surf resorts in an authentic way. As Hinch and Higham (2011) argue, “The search for authenticity is one of the main driving forces for tourism” (p. 65). Sustainability is thus positioned as an improved amenity for guests, adding to guests' experience of authenticity through value-added services such as additional interpretation of local cultural mores and languages, better guiding to local places of interest, happier local communities, satisfied and better informed staff, and more local activity options.

It is still too early in the implementation of STOKE Certified to make declarations about its overall impact on the industry. Indeed, the emphasis to date has been on getting implementation

in the initial five trial properties “right.” The fact that an additional four properties have, unsolicited, approached STOKE Certified for accreditation is encouraging and perhaps indicative of the fact there is indeed an appetite in the industry for positive change. Future research needs to track this and document how change unfolds. Buckley (2001) noted the branding power of ecolabels, and Esparon et al. (2014) provided strong empirical evidence in mainstream tourism that certified sustainable products are more attractive to consumers than non-certified ones. The evidence provided in this chapter suggests the same may be true in surf tourism, but more research is needed to establish this categorically. As the first sustainability certification program in surf tourism, the opportunity to study industry attitudes to sustainability and related consumer behaviors on a longitudinal basis is particularly appealing. Ultimately however, perhaps the main benefit of sustainability certification for surf tourism operators will be in, as Karlsson and Dolnicar (2016) argued, “protection of the very resources upon which their business success depends” (p. 694).

References

- Abel, A., & O'Brien, D. (2015). Negotiating communities – sustainable cultural surf tourism. In J. Ponting & G. Borne (Eds.), *Sustainable stoke – transitions to sustainability in the surfing world* (pp. 154–165). Plymouth, UK: University of Plymouth Press.
- Aguerre, F. (2009). A surfer at the Olympic Congress in Denmark. *ISA Newsletter*.
- Barbieri, C., & Sotomayor, S. (2013, April). Surf travel behavior and destination preferences: An application of the serious leisure inventory and measure. *Tourism Management*, 35, 111–121.
- Black, R., & Crabtree, A. (2007). Setting the context: Quality in ecotourism. In R. Black & A. Crabtree (Eds.), *Quality assurance and certification in ecotourism* (pp. 1–24). Wallingford: CABI.
- Buckley, R. (2001). Tourism ecolabels. *Annals of Tourism Research*, 29, 183–208.
- Buckley, R. (2002a). Surf tourism and sustainable development in Indo-Pacific Islands: 1. The industry and the islands. *Journal of Sustainable Tourism*, 10, 405–424.
- Buckley, R. (2002b). Surf tourism and sustainable development in Indo-Pacific Islands: 2. Recreational capacity management and case study. *Journal of Sustainable Tourism*, 10, 425–442.
- Butt, T. (2015). Surf travel: The elephant in the room. In J. Ponting & G. Borne (Eds.), *Sustainable stoke – transitions to sustainability in the surfing world* (pp. 200–213). Plymouth, UK: University of Plymouth Press.
- Dolnicar, S., Crouch, G., & Long, P. (2008). Environment-friendly tourists: What do we really know about them? *Journal of Sustainable Tourism*, 16, 197–210.
- Dolnicar, S., & Fluker, M. R. (2003). Behavioural market segments among surf tourists: Investigating past destination choice. *Journal of Sport & Tourism*, 8, 186–196.
- Esparon, M., Gyuris, E., & Stoeckl, N. (2014). Does ECO certification deliver benefits? An empirical investigation of visitors' perceptions of the importance of ECO certification's attributes and of operators' performance. *Journal of Sustainable Tourism*, 22, 148–169.
- Fanning, M., & Baker, T. (2011). *Surf for your life*. Sydney: Random House Australia.
- Findeisen, D. (2015). *A case study of the label “STOKE Certified”* (Unpublished geography thesis). Justus Liebig University, Geissen, Germany.
- Font, X., & Buckley, R. C. (Eds.). (2001). *Tourism ecolabelling: Certification and promotion of sustainable management*. Wallingford, Oxon: CABI Publishing.
- Fraguell, R. M., Martí, C., Pintó, J., & Coenders, G. (2015). After over 25 years of accrediting beaches, has Blue Flag contributed to sustainable management? *Journal of Sustainable Tourism*, 24, 882–903.
- Gormsen, E. (1997). The impact of tourism on coastal areas. *GeoJournal*, 42, 39–54.
- Hinch, T., & Higham, J. (2011). *Sport tourism development* (2nd ed.). Bristol: Channel View Publications.
- Hritz, N., & Ross, C. (2010). The perceived impacts of sport tourism: An urban host community perspective. *Journal of Sport Management*, 24, 119–138.
- Hulet, S. (2006). Liner notes. *The Surfer's Journal*, 15(6), 128.

- Karlsson, L., & Dolnicar, S. (2016). Does eco certification sell tourism services? Evidence from a quasi-experimental observation study in Iceland. *Journal of Sustainable Tourism*, 24, 694–714.
- Martin, S. A., & Assenov, I. (2012). The genesis of a new body of sport tourism literature: A systematic review of surf tourism research (1997–2011). *Journal of Sport & Tourism*, 17, 257–287.
- Melo, C., & Wolf, S. (2005). Empirical assessment of eco-certification: The case of Ecuadorian bananas. *Organisation & Environment*, 18, 287–317.
- Minsberg, T., & Corasaniti, N. (2015, February 23). Pro surfing looks beyond the TV screen to draw viewers. *New York Times*, p. B1.
- O'Brien, D., & Eddie, I. (2013, February). *Benchmarking global best practice: Innovation and leadership in surf city tourism and industry development*. Keynote presentation at the Global Surf Cities Conference. Kirra Community and Cultural Centre, Gold Coast, Australia.
- O'Brien, D., & Ponting, J. (2013). Sustainable surf tourism: A community centered approach in Papua New Guinea. *Journal of Sport Management*, 27, 158–172.
- Pierce, L. (2016). STOKE Certified: World's first resort sustainability assessment. *Transworld Business*. Retrieved from <http://business.transworld.net/news/stoke-certified/#V5ts8uSjIEJrps2w.97>
- Ponting, J. (2008). *Consuming Nirvana: An exploration of surfing tourist space* (Unpublished doctoral thesis). University of Technology Sydney, Sydney, Australia.
- Ponting, J. (2014). Comparing modes of surf tourism delivery in the Maldives. *Annals of Tourism Research*, 46, 163–184.
- Ponting, J., & McDonald, M. G. (2013). Performance, agency and change in surfing tourist space. *Annals of Tourism Research*, 43, 415–434.
- Ponting, J., McDonald, M. G., & Wearing, S. (2005). De-constructing wonderland: Surf tourism in the Mentawai Islands, Indonesia. *Society and Leisure*, 28, 141–162.
- Ponting, J., & O'Brien, D. (2014). Liberalizing Nirvana: An analysis of the consequences of common pool resource deregulation for the sustainability of Fiji's surf tourism industry. *Journal of Sustainable Tourism*, 22, 384–402.
- Ponting, J., & O'Brien, D. (2015). Regulating “Nirvana”: Sustainable surf tourism in a climate of increasing regulation. *Sport Management Review*, 18, 99–110.
- Saufi, A., O'Brien, D., & Wilkins, H. (2014). Inhibitors to host community participation in sustainable tourism development in developing countries. *Journal of Sustainable Tourism*, 22, 801–820.
- SHIFT. (2015). *2015 SHIFT award winners*. Retrieved from <http://shifhistory.org/2015/2015-shift-award-winners/>
- Smith, K. (2016). Matanivusi: Fiji's sustainable surf resort on becoming STOKE certified. *TransWorld Business*. Retrieved from <http://business.transworld.net/features/matanivusi-fijis-sustainable-surf-resort-on-becoming-stoke-certified/#9xkF2Q5UWuz0D7hP.97>
- Smith, K., & Bradstreet, K. (2016). Initiators of change: Six companies driving sustainability. *TransWorld Business*. Retrieved from <http://business.transworld.net/features/sustainability/>
- Stapleberg, G. (2014). Billabong Pro Tahiti generates largest audience in pro-surfing history. *World Surf League*. Retrieved from www.worldsurfleague.com/posts/66691/billabong-pro-tahiti-generates-largest-audience-in-pro-surfing-history
- Towner, N. (2015). Surf tourism and sustainable community development in the Mentawai Islands, Indonesia: A multiple stakeholder perspective. *European Journal of Tourism Research*, 11, 166–170.
- Towner, N. (2016). Community participation and emerging surfing tourism destinations: A case study of the Mentawai Islands. *Journal of Sport & Tourism*, 20, 1–19.
- Trendafilova, S., Babiak, K., & Heinze, K. (2013). Corporate social responsibility and environmental sustainability: Why professional sport is greening the playing field. *Sport Management Review*, 16, 298–313.
- Warshaw, M. (2004). *The encyclopedia of surfing*. New York, NY: Penguin Books.
- Weaver, D. (2009). Reflections on sustainable tourism and paradigm change. In S. Gössling, C. M. Hall, & D. B. Weaver (Eds.), *Sustainable tourism futures: Perspectives on systems, restructuring, and innovations* (pp. 33–40). New York, NY: Routledge.



Taylor & Francis

Taylor & Francis Group
<http://taylorandfrancis.com>

SECTION 5

Sociocultural approaches



Taylor & Francis

Taylor & Francis Group
<http://taylorandfrancis.com>

SUSTAINABILITY, GREENWASHING, AND THE LIGHT GREEN APPROACH TO SPORT ENVIRONMENTALISM

Jay Johnson and Adam Ehsan Ali

In a handbook dedicated to helping us towards understanding how sustainability is understood, problematized, measured, and mobilized in the service of sport, this chapter asks us to consider how such a word may be taken up and utilized for purposes other than addressing harmful practices that occur as a result of sport. Because this book centers upon sustainability, it seems appropriate to unpack this particular word in order to understand how useful it is when used in statements or policies that sport organizations create to address environmental concerns. This is not, of course, to say that sport entities or event organizers are not attempting to make environmentally sound decisions that show they are, at the very least, mindful of how their operations affect the environment. What is important to question, however, is what sustainability actually means. How do we understand it? How do we visibly see sustainability in action – as it is happening? How do we implement sustainable goals, and are these really helping to preserve the complex, diverse ecosystems of the planet? What are the variables by which sustainability is measured? How abstract are they? And finally, what do we mean when we say that we want a sustainable future? Do we mean a generation from now? A hundred years? Mol (2010) observes that sustainability is highly fragmented, context dependent, and is open to different interpretations, leading some scholars to argue for eliminating the word entirely. He points out, however, that despite this anxiety, sustainability remains a central concept in debates and discourse surrounding environmental action and advocacy. This makes it pertinent to our discussion of its use in the arena of sport.

Selman (as cited in Mansfield, 2009) outlines a thoughtful version of sustainable development in ecological terms as characterized by three forms of equity. First, intergenerational equity ensures that the Earth is passed on to the future in the same condition as when it was inherited. Second, the needs of all peoples within a single generation are cared for, what she terms intragenerational equity. Finally, she defines transfrontier equity as living within the limits of local resources. These proponents of ecological sustainability encourage a foundational shift in the way humans live, which will then significantly decrease the numerous ways we extract, consume, and deplete the Earth's resources while destroying its ecosystems in the process. Such a process requires a transformation in governance and ideology concerning the relationship between humans and nature, and, as Rosenberg discusses in Chapter 4, is representative of a "dark green" approach that calls for a break in capitalist and economically focused culture. The underlying

argument here is that these types of cultures, ones in which we currently live, are environmentally unsustainable, and that we should be protecting the environment for its intrinsic worth outside of dominant systems that seek to measure its worth through consumption and the market (Lensky, 1998). This represents a challenge to the dominant Western ways of living (Mansfield, 2009) and emphasizes the finitude of the Earth's resources, which justifies the need to cease the excessiveness of Western lifestyles while limiting consumption and growth (Dobson, 2007).

These are important concepts to understand when assessing just how much needs to change in order for us to simply stop harming the environment now, much less make it "sustainable" for future generations. We concede, however, that although Selman's forms of equitable sustainability should be taken seriously, it is difficult to imagine how to go about implementing such measures. To do so would be an enormously difficult task because, as we will argue, sustainability is an extremely ambiguous concept. There is no universal meaning behind the word that specifically tells us when it is happening, how it should happen, and how we can discern it. The important point here is that it is the very ambiguous nature of the term sustainability that makes it both a powerful concept and dangerous tool, in terms of how it is utilized in mainstream discourses about environmentalism and "green" initiatives.

More widely understood approaches to addressing environmental issues are informed by these mainstream discourses, which are what scholars have termed "light green." In contrast to dark green, a light green approach to the environment is about maintaining the current social and economic status quo by harboring "environmentalism" within a paradigm of profitability and market forces. Within this approach lies a steadfast belief in economic and technological forces as the best and most viable solutions towards improving current and future environmental health. It is within this technocratic, market-driven approach to environmentalism that sustainability has become a popular term with which to label the various initiatives and projects taken up by companies and organizations, both in the private and public sector, to illustrate their ecological stewardship. Thus, although we recognize the importance of attempting to understand, measure, and evaluate sustainable objectives, we are more interested in how sport organizations, event organizers, and facilities offer promising goals on their environmental initiative, such as a "sustainable" practice, as part of their marketing, campaigning, and goals, but in reality fail to deliver on those promises in their actual operations; this process is known as "greenwashing."

Greenwashing

Mahoney, Thorne, Cecil, and LaGore (2013) define greenwashing as a socio-political perspective which suggests that businesses report positive communications of "green" initiatives put forth by their organizations to help build legitimacy within the social environment. These initiatives, however, are either difficult to measure, or non-existent in practice. With the increased awareness of the effects of climate change and the overall degradation caused by industrial practices, pressures have mounted on sport organizations and facilities for the development of more "green" practices that demonstrate a commitment to environmental sustainability. Rather than addressing the embedded causes of environmental degradation, however, many sport organizations have instead utilized the marketability of "going green" in order to increase profitability and enhance their reputation as socially responsible entities. Millington and Wilson (2013) describe the practice of greenwashing as one where there is a "material conflict that manifests as an overstatement of industry's environmental stewardship" (p. 470). This occurs when sport organizations and events recognize the importance of portraying themselves positively through rhetoric and campaigns, but either fail to adequately implement substantial changes to follow through on such promotion, or do not institute the adjustments at all. As we will see, although

greenwashing is not limited to the sporting realm, it has become a central technique for sport mega-event organizers such as the Olympics and FIFA World Cup to deflect criticism for the massive amounts of ecological damage such events reap upon the cities and countries in which they are hosted. Furthermore, numerous sport organizations and leagues have implemented policies outlining their environmental initiatives, which should be met with hesitation as to whether they are either feasible in the first place, or followed through on at all.

There are two central reasons why greenwashing is effective as part of an organization's corporate social responsibility (CSR) portfolio, both of which follow a light green approach. First of all, under this paradigm, so-called solutions to environmental issues are believed to be found within the industry, as Millington and Wilson (2013) highlight. Because of this, it is taken for granted that policies created by industry leaders will provide the best possible outcome for the environment. Such understandings allow corporations to implement creative, attractive policies and messaging around their relationship with the environment, which portray them in a "green-friendly" way. This messaging is done strategically to ensure that it does not actually hold the organization to a set standard or goal that must be met. Rather, it occurs through what we term "purposeful ambiguity," which is a common tactic within mainstream green CSR initiatives. Purposeful ambiguity refers to a process by which information pertaining to an environmental policy or objective is outlined in particular ways that make it difficult to discern how it will be implemented, why its implementation is important, and how it will be measured. If we refer back to our efforts to problematize sustainability, for example, we can begin to understand how the ambiguity of the term makes it useful for different organizations. This allows corporations to themselves define what sustainability is under their purview in ways that are internally friendly to their operations and externally pleasing to their stakeholders. This is why sustainability is dangerous; it can be used as a form of rhetoric within a light green paradigm, while lacking the necessary teeth that would hold the organization accountable to decrease its ecologically harmful practices.

Second, purposeful ambiguity is incredibly useful in greenwashing because oftentimes the goals, objectives, and measurable results are disseminated by these organizations in ways that align with environmentalist reform, but are also highly abstract and convoluted. It is not uncommon for sport event organizers and corporations to publish new environmental policy that does not include how the organization will measure whether these goals and policies are achieved. This allows the organizations to present overly ambitious environmental policy that (1) assists in manufacturing consent amongst the general public and government watchdogs, (2) makes it difficult for grassroots environmental organizations – those with a dark green ecological approach – to argue for alternative forms of sustainability objectives, and (3) maintains its current operations, some of which are potentially do the most harm to the environment.

Greenwashing and the Olympics

One of the largest culprits of greenwashing in the sporting world over the last two decades has been the International Olympic Committee (IOC) through its staging of the Summer or Winter Olympics every two years. As Cantelon and Letters (2000) note, international mega-events like an Olympic and Paralympic Games transform the physical environment of their host cities, surrounding regions, and countries in profound and permanent ways. With the vast amount of construction, landscaping, and resource depletion needed to construct the numerous facilities and modify outdoor environments for the Games, one need not look very hard to discern the potential harm that befalls host cities in the preparation phase, during the Games themselves, and following their completion. This does not include the amount of damage that occurs by way

of increasing local transportation; air travel of athletes, organizers, media, and spectators to and from the event; and the massive accumulation of waste that occurs throughout the competition.

The IOC's formation of its "green" policy was created following the 1992 Albertville Olympics, whose significant environmental damage was covered widely in the media leading up to the Games (Cantelon & Letters, 2000; see also Chapter 17). The mismanagement of the construction of the facilities at Albertville combined with a lack of environmental policy meant that the IOC had to repair its tarnished environmental reputation. The following Games in Lillehammer, who seriously took into account the environment in their planning and was quite successful overall, was quickly co-opted by the IOC to champion itself as a global environmental steward (Cantelon & Letters, 2000). In 1994, the "Environment" became the third pillar of Olympism, along with "Sport" and "Culture," and an environmental policy was in place by the Nagano Olympics in the winter of 1998. Unsurprisingly, the policy was created using a light green approach to environmental concerns (Lenskyj, 1998). As such, attention to the environment has become one of the central pieces of every Olympic Games bid proposal. Despite continuing to announce its commitment to the environment through sport by the IOC, including holding conferences and summits, signing pledges, and calling for environmental stewardship among its athletes, environmental concerns continue to be associated with all of the consequent Olympic Games that have taken place – a clear case of greenwashing.

In their evaluation of green legacies stemming from the last three Summer Olympic Games in Athens, Beijing, and London, Samuel and Stubbs (2013) note that bidding cities have "talked green" in order to be considered a serious contender to win their hosting proposal. Sustainability is a key aspect of these environmental bids, as one of their main findings was that it was critical to include sustainability considerations within the vision, mission, and brand of bid proposal, as well as in various aspects of the Olympic Games organization. As Mol (2010) argues, sustainability is a global attractor in that it has become a point of orientation, especially within mega-events such as the Olympics, where it materializes throughout not just the policies of the bid committees, but also its facilities, events, and television broadcasts.

Additionally, Samuel and Stubbs (2013) point to the ability of bidding parties to mimic the environmental policies and tactics of previously successful bids, while also implementing ambitious strategies that raise their environmental profile in the hopes of "outgreening" the competition. Importantly, they warn that positive legacies only occur if promises made on the environment by such bid committees are actually delivered.

Moreover, because no best practice standard has been implemented globally or by the IOC itself, environmental sustainability and green legacy benchmarks are actually set by the individual bid committees. As such, the pattern that begins to form around these Olympic bids is one of purposeful ambiguity. Because there are not hard standards and objectives put in place through the IOC's environmental policy, other than it is important and needs to be a significant part of any major bidding city's proposal, each city has the freedom to create ambitious policies that may not be easy to measure and goals that are difficult to achieve. Pentifallo and Van Wynsberghe (2012) note that the phrasing of questions that the IOC pose to potential bid committees does not require mandatory measures, nor compliance from the bids, and no penalty if the promises go unrealized. And because the only best standard is based on the rhetoric, not follow-through, of previous successful bids where it is unclear whether or not these environmental promises were delivered upon, there is no way of measuring and, thus, comparing these standards between each successive host city. This is accentuated through the power of sustainability as a global attractor; its simultaneous importance yet ambiguity is what makes it an excellent leveraging tool for constituting ecological stewardship amongst Olympic bids committees. So, as Collins, Jones, and Munday (2009) note in their assessment of mega-sport event environmental impacts,

although the IOC appears to lead the way on sustainable commitments, there are no methods for assessing whether these strategies are actually effective in reducing their ecological footprint or improving environmental health and sustainability.

What complicates this situation further is that, as Pentifallo and VanWynsberghe (2012) argue, it is through these continuous phases of promises made by Olympic bid committees that the IOC's sustainability agenda is actually moved forward, which is why the IOC-designed environmental measures have failed to be met. As each Olympics occurs, there is an environmental rhetoric arms war whereby bid committees institutionalize the messaging of sustainability and environmental protection in an effort to mimic, and yet surpass, previous winning bids (Pentifallo & Van Wynsberghe, 2012; see also Chapter 8). This places the authority of environmental protection at each Olympics Games within the bid committees themselves, rather than with the IOC.

This began in 2000 with the so-called "Green Games," which took place in Sydney. Lenskyj (1998) found that Sydney's Olympic and Paralympic bid committee seemed willing to own such a label when it was fortuitous for their image, but less so when it became a point of criticism of their lack of follow-through on their environmental promises. This included failing to mention that the proposed Olympic site and waterway were contaminated with toxic waste. Such facts stand in stark contrast to Bruce Baird, the minister responsible for the bid, who was cited in 1993 saying that "no other event at the beginning of the 21st century will have a greater impact on protecting the environment than the 2000 Olympic Games in Sydney" (Lenskyj, 1998, p. 347). As the Games drew near, however, criticism built as the Sydney bid committee's relationship with Greenpeace strained after the former failed to follow through on their environmental commitments. Peggy James, the coordinator of Green Games Watch 2000, a fellow environmental activist organization, actually labeled the committee's public relations strategy as a "greenwash" exercise (Lenskyj, 1998).

Beyer (as cited in Samuel & Stubbs) states that Beijing, in response to its previous bid loss to Sydney, presented an intricate environmental plan for its eventual winning bid to host the 2008 Games. Air quality was, however, an issue in Beijing, despite the "Green Olympics Program" created by its organizers (Sheets et al., as cited in Paquette, Stevens, & Mallen, 2011). And although Vancouver's Olympic organizers were the first committee to integrate "sustainable principles" into its management structure and that "sustainability" was included as one of five values of the committee, negative environmental implications came out of the 2010 Winter Games, including a lack of resources dedicated to their green initiatives as well as the controversial highway expansion through bluffs and wetlands for Games transportation (Ponsford, 2011). Interestingly, the rhetoric of sustainability continued after the Games were over in its "Greenest City Initiative," which was meant to brand Vancouver as a sustainable city on both a local and international scale (VanWynsberghe, Derom, & Maurer, 2012). Rather than this initiative promoting more meaningful change towards ecologically healthy action, the Greenest City policy was built heavily around the powerful term of sustainability, leveraging this association to inspire individual behavioral changes among its citizens and promote its green friendly brand towards the world community. Here we see how greenwashing tactics are employed within and towards market-driven ventures.

The rhetoric of sustainability only continued with the Rio Games, whose committee structured its "Sustainability Management Plan" around nine specific objectives. One of the objectives listed in the 106-page document is Water Treatment and Conservation; however, the waterways where Olympic events were to be held remained highly contaminated in the months leading up the Games.

An important final point on the Olympics' environmental initiatives and greenwashing tactics is to understand the larger social processes that condition the precipitation of sustainable

practices that are without any substance. Our current economic system and governance structure emphasize financial growth and technological innovation as the basis for improving the well-being of humans. There is an inherent, taken-for-granted belief in the free market, competition, and individual responsibility as the basis for personal success and resolving social issues, environmentalism included. As we have previously noted, such a belief predisposes solutions to ecological concern that maintain economic stimulation and growth (i.e., light green), while characterizing alternative measures that would slow down or halt economic growth (i.e., dark green) as outlandish, extreme, and unnecessary.

With all that we know concerning the state of host cities following an Olympic and Paralympic Games both from an environmental and economic standpoint, it would seem reasonable to question whether or not we should be hosting such events in the first place. Because even if all of these sustainability initiatives were successful, the damage that is done to all of the specific ecosystems and landscapes on which Olympic stadiums and facilities are built will still remain. Instead, focusing on sustainability initiatives allows for growth to continue while proposing to maintain or preserve the environment (for future growth). Dark ecological supporters argue that it is the never-ending need for growth that must be rethought in critical ways, especially when infinite amount of growth is proposed in a finite world with limited resources.

Although greenwashing occurs at mega sport events like the Olympics, it is also common throughout professional sports as well. We turn to forms of greenwashing as it relates to NASCAR and the National Hockey League next.

Professional sport, greenwashing, and periphery adjustments

An important aspect of greenwashing with a light green approach to environmental concerns is what we term periphery adjustments. Periphery adjustments represent changes that are made in policy, objectives, marketing, messaging, and operations by sporting leagues, events, and organizations that allow these entities to appear as though they are either being pro-active or responding to ecological issues either within their organization or more generally speaking, but importantly to do so without changing the status quo. That is, periphery adjustments do not disrupt the core functioning, financial bottom lines, and overall growth of an organization, which dark green advocates will contend do the most harmful damage to the environment. Instead, the organization looks externally to make up for those foundational practices, or dovetails its ongoing technological growth and business “efficiency” with ecological stewardship. These small adjustments or connections are then leveraged for what Millington and Wilson (2013) call impression management campaigns, where organizations promote themselves as caring about the environment through showcasing these adjustments. Periphery adjustments can range from switching to LEED lighting to purchasing carbon offsets and running spectator recycling drives. The important point is that these entities appear pro-active in their environmental work while the under layer of degradation continues, yet goes unnoticed.

NASCAR

NASCAR represents a good example of a sport organization that utilizes periphery adjustments to maintain a green image. In responding to concerns about the detrimental effects of their sport on the environment, the organization implemented NASCAR Green, an arm of the company that is meant to reduce its overall environmental impact through “strategic partnerships” (NASCAR, 2016). Arguably its most significant green initiative came in 2011, when the organization partnered with gas company Sunoco and American Ethanol to launch E15,

a biofuel with 15 percent ethanol that is meant to reduce greenhouse emissions by 20 percent while increasing horsepower. In speaking about the efficiency of the E15 brand, race car driver Austin Dillon stated that “NASCAR is an American pastime that is proving you can make anything green . . . and that when it comes to auto performance, you don’t have to sacrifice anything to help improve the environment” (Pennell, 2016, para. 16). The organization also claims that through its Clean Air Tree Planting Program in partnership with the Arbor Day Foundation and the Virginia Department of Forestry, it has offset carbon emissions for all NASCAR series racing for the past 6 years, as well as the next 40 years. It has planted over 400,000 trees since the program began.

In response to the E15 innovation, by addressing their emissions through the creation of a biofuel that uses 15 percent ethanol and thus saves on gasoline, NASCAR has attempted to locate the concern associated with their sport through increasing technological efficiency. Whether or not the E15 brand fuel actually makes a significant difference in cutting down on NASCAR emissions, it is utilized as a means to adjust the sport in ways that do not affect its core functioning. That is, although it has cut down 20 percent of emissions, that disguises the fact that dozens of cars are still driving around a 2.5-mile track for 200 laps, or 500 miles, at many of these races. A dark green ecological approach would ask more structural questions about maintaining a sport that involves such an (unnecessary) depletion of fossil fuels and release of pollutants, especially with the growing evidence about climate change, the finiteness of our resources, and overall human impact on the environment. A light green approach, in contrast, locates the solution in advancing technology and maintaining growth and consumption, which inherently involves peripheral adjustments such as making new forms of bio-fuel.

Although one could theoretically argue that there is some value in creating more efficient fuel as a means to minimize our reliance on fossil fuels, it is hard to envision a tree planting program that has managed to offset the next 40 years of NASCAR series racing carbon emissions. Offsetting through tree planting as a practice is problematic for a number of reasons. First of all, there is a high level of abstraction in calculating how much each tree that is planted will offset certain amounts of carbon emissions. There is an underlying assumption that all the trees planted will grow and mature successfully, on a somewhat linear timeline. This does not take into account the interaction newly planted trees have with the ecosystem they are introduced to, which could affect their likelihood of survival or their effect on other species within that system.

Second, it is ambiguous as to what magnitude NASCAR events are actually being offset in the first place. NASCAR Green states that it the program will offset all NASCAR series racing; does that only include the races themselves? Does it not include all the carbon emissions used in all other aspects of the organization’s functioning, including travel, food, merchandise, and promotions? Moreover, this probably does not take into account the massive amounts of carbon emissions that are released through traveling by fans, sponsors, and other stakeholders to each event.

Finally, Wilson (2012) importantly points out that another assumption of offsetting is that environmental damage in one place can actually be balanced by an environmentally friendly project such as tree planting, in another, arguing that this in of itself is highly abstract. Moreover, he implores us to think about the actual destruction that occurs, whether or not it is offset through other means. So, in actuality discussing whether or not the tree planting effectively works as an offset program fails to address the fundamental environmental concern with NASCAR and other sport corporations, which is the significantly harmful ecological damage that occurs because of their core operations. Greenwashing is not just about disguising the damage that is done by an organization through overestimating its environmental stewardship. It also shapes the discourses that narrate the conversation about environmental advocacy, and in doing so silences more dark green forms of ecological advocacy.

NHL Green

Finally, one of the most highly lauded organizations in terms of its environmental initiatives is the National Hockey League (NHL) and its NHL Green program, which began in 2010. The league has won many awards for its environmentally based programming and operational objectives, including the 2015 Green Power Leadership Award from the U.S. Environmental Protection Agency (EPA) (Constellation, NHL Reduce Environmental Impact, 2015). In addition, it was invited to participate on a panel organized by the Green Sports Alliance at the United Nations Climate Change Talks, which took place in Paris in December of 2015. It has been specifically applauded for the release of its Sustainability Report in 2014, which was the first report published by any professional league in North America and that disseminated the carbon footprint and resource use of the NHL and its member clubs. Although the league has numerous initiatives, for the purposes of this chapter we will focus on its initiatives surrounding water restoration and the league's Gallons for Goals program.

Water is particularly significant to the NHL, as it is needed in considerable amounts to create and maintain the ice surfaces on which the 30 member clubs play their games. This, according to the league, made becoming focused on freshwater scarcity due to climate change particularly important. League senior vice president of NHL Green and Executive Director of the NHL Foundation Bernadette Mansur states that "[w]ater is in the DNA of the NHL. Many of our players grow up skating on frozen ponds. Freshwater scarcity affects their opportunity to learn and play the game outdoors" (NHL, 2012, para. 3). As such, the league implemented the Gallons for Goals program in 2011, where for every goal scored during the regular season, the NHL restores 1,000 gallons of water to a critically dewatered river. A commendable act, to be sure. In its inaugural year, the league donated over 6 million gallons of water through the purchasing of water restoration certificates (WRC) from the Bonneville Environmental Foundation (BEF), which then goes to support a number of national water restoration projects.

In a similar vein to tree planting and the development of E15 fuel associated with the environmental projects of NASCAR, the NHL's water restoration initiative employs periphery adjustments in order to address a massive, systemic amount of depletion to water that occurs every year as a result of the NHL's operations. To provide some context, in 2015–2016, 6,565 goals were scored throughout the regular season. Each WRC through the BEF costs \$2.00, and for each WRC purchased there is 1,000 gallons of water restored. This means that the over 6 million gallons of water restored by the league through these certificates cost the NHL \$13,130. Although we can debate whether or not that represents a significant financial commitment in attempting to restore water, a resource that is arguably the most used to keep the league running, it should be noted that in 2011–2012, the league depleted over 321 million gallons of water (NHL, 2014). This means that just over 2 percent of the water used by the league was restored through the purchasing of these certificates.

In this examples we see a good illustration of purposeful ambiguity, where it is unclear whether the NHL is making a significant environmentally friendly contribution in their commitment to water restoration. If one was to simply read that the league restored over 6 million gallons of water per season, the assumption is that it is indeed significant. The NHL, however, while releasing its water use, did not show us the percentage of that water that it actually restored. And because the estimation used to calculate water use included only enough to flood one sheet of ice, it excludes all the other ways water is used in NHL arenas.

Furthermore, if the league was to spend around \$650,000 on water restoration, it could hypothetically restore all of its water use through purchasing WRCs. This, of course, excludes all of the critiques regarding the idea of depletion or degradation in one area being offset

or balanced by a green project in another that we explored with NASCAR's initiatives. But through a combination of periphery adjustments and purposeful ambiguity, the NHL comes across as an environmentally pro-active organization that cares about ensuring water restoration. This is one of the many strategies that have helped the league become one of the green leaders of the professional sport industry in North America.

Conclusion: the future of greenwashing and sustainability

Through tracing a history of the IOC's environmental record and the initiatives of two professional sport organizations in North America, NASCAR and the NHL, we have provided a couple of examples of how greenwashing is utilized within the realm of sport to portray its stakeholders as champions of environmental action and citizenship while disguising the continuing practices of degradation that occur with its foundational operations. The examples chosen to illustrate these practices were not random, but rather were selected because they all represent large organizations that many have applauded for being leaders in environmentalism and standing on the frontier of the green sporting enterprise. In addition, the Olympic and Paralympic Games represent a rare spectacle that results in the formation of facilities and significant changes to infrastructure that would not otherwise occur without its happening. And yet, because the environment is not a priority beyond its rhetorical meanings, the consumption and growth that occurs in the lead up to and during each Games devastates the environment and does irreparable damage to the ecosystems it exploits. Meanwhile, both the NHL and NASCAR, leagues that require massive amounts of resource depletion, whether it be water or fossil fuels, have strategically increased their visibility as green leaders in the industry.

Such incidences are why those who believe in dark green ecological approaches to sustainable action are skeptical at best when it comes to environmental solutions that occur within the current economic and social conditions. An important reason for this is that, in contrast to those who support a light green, technocratic approach, dark green ecologists believe that growth and technological innovation are not harmonious with environmental health or sustainability. Growth does not occur without consumption, and capitalism does not occur without exploitation. Under these conditions, it is difficult to believe that true dedication to environmental health and sustainability can occur. If it were to, there would be serious questions about how sport fits (or does not fit) into a society in which ecological accountability is prioritized.

Offering pragmatic recommendations of how to approach environmentalist approaches in sport at present, however, should not be overlooked. First of all, it is important to explore how a sport organization, league, or event is defining, measuring, and assessing sustainability. Are their objectives realistic? On what foundation was environmental policy built? Who are the different stakeholders involved and what are their particular histories when it comes to environmental approaches? Are the goals and objective clear? Or is there ambiguity? What is the relationship between their objectives and their fundamental operations? Is there significant dissonance between the two? These are important questions to consider when problematizing the likelihood that an organization will follow through on their promises, or whether it is simply rhetoric and thus a greenwashing culprit.

A second recommendation falls in championing alternative approaches to ecological stewardship. As Millington and Wilson (2013) note, such a critique of light green approaches is not to demean or trivialize the great efforts many companies and individuals make towards more sustainable or green policies and practices. It is instead about how certain approaches become privileged as the best or only way to champion environmentalism. This makes it easier for some organizations to take advantage of the light green approach through greenwashing,

whereas other entities may actually make commendable changes in their operational structure. Advocating for more active government involvement in the industry's relationship with the environment would represent an alternative approach that forces the private sector to adhere to public policy that is in the interest of the people, rather than a financial bottom line. Obviously, such an example goes beyond the arena of sport, but it can be approached as a strategy to hold both professional and amateur sport entities more accountable towards high environmental standards.

Finally, we believe that serious questions need to be asked about the benefits of spectacles such as the Olympics and Paralympics, the World Cup, and other mega-events, when weighed against its costs from environmental, economical, and social perspectives. How does the commercialization of the Olympics, and amateur sport, mediate the discussion about whether or not these events should occur at all? In what ways can the term sustainability be problematized in order to unearth the atrocities that occur to the less fortunate in host cities, which are often displaced in lieu of new facilities? What is the connection between this and the exploitation of the environment? Can there really be a "Green Games," and if so, what does that look like? In critically attending to some of these queries, we can attempt to unsettle the current dominant understandings of "green" advocacy as they occur in sport and spark a more mindful approach towards resolving the wants of sport with the needs of the environment.

References

- Cantelon, H., & Letters, M. (2000). The making of the IOC environmental policy as the third dimension of the Olympic movement. *International Review for the Sociology of Sport*, 35, 294–308.
- Collins, A., Jones, C., & Munday, M. (2009). Assessing the environmental impacts of mega sporting events: Two options? *Tourism Management*, 30, 828–837.
- Constellation, NHL reduce environmental impact of 2016 Bridgestone Winter Classic. (2015, December 30). *Business Wire*. Retrieved from www.businesswire.com/news/home/20151230005297/en/Constellation-NHL-Reduce-Environmental-Impact-2016-Bridgestone/
- Dobson, A. (2007). *Green political thought*. London: Routledge.
- Lenskyj, H. J. (1998). Sport and corporate environmentalism. *International Review for the Sociology of Sport*, 33, 341–354.
- Mahoney, L. S., Thorne, L., Cecil, L., & LaGore, W. (2013). A research note on standalone corporate social responsibility reports: Signaling or greenwashing? *Critical Perspectives on Accounting*, 45, 350–359.
- Mansfield, L. (2009). Fitness cultures and environmental (in)justice? *International Review for the Sociology of Sport*, 44, 345–362.
- Millington, B., & Wilson, B. (2013). Super intentions: Golf course management and the evolution of environmental responsibility. *The Sociological Quarterly*, 54, 450–475.
- Mol, A. P. J. (2010). Sustainability as global attractor: The greening of the 2008 Beijing Olympics. *Global Networks*, 10, 510–528.
- NASCAR. (2016). *About NASCAR Green*. Retrieved from <http://green.nascar.com/about/>
- National Hockey League (NHL). (2012, January 17). *NHL Green, NHL Foundation launch "Gallons for Goals" to restore water to freshwater streams*. Retrieved from www.nhl.com/news/nhlgreen-nhl-foundation-launch-gallons-for-goals-to-restore-water-to-freshwater-streams/c-612208/
- National Hockey League (NHL). (2014, July 21). *NHL sustainability report*. Retrieved from <http://ice.nhl.com/green/report/>
- Paquette, J., Stevens, J., & Mallen, C. (2011). The interpretation of environmental sustainability by the International Olympic Committee and Organizing Committees of the Olympic Games from 1994 to 2008. *Sport in Society*, 14, 355–369.
- Pennell, J. (2016, January 9). American ethanol: Fueling NASCAR's green revolution. NASCAR. Retrieved from <http://green.nascar.com/news-media/american-ethanol-fueling-nascars-green-revolution/>

- Pentifallo, C., & VanWynsberghe, R. (2012). Blame it on Rio: Isomorphism, environmental, protection and sustainability in the Olympic Movement. *International Journal of Sport Policy and Politics*, 4, 427–446.
- Ponsford, I. F. (2011). Actualizing environmental sustainability at Vancouver 2010 venues. *International Journal of Event and Festival Management*, 2, 184–196.
- Samuel, S., & Stubbs, W. (2013). Green Olympics, green legacies? An exploration of the environmental legacies of the Olympic Games. *International Review for the Sociology of Sport*, 48, 485–504.
- VanWynsberghe, R., Derom, I., & Maurer, E. (2012). Social leveraging of the 2010 Olympic Games: “Sustainability” in a City of Vancouver initiative. *Journal of Policy Research in Tourism, Leisure & Events*, 4, 185–205.
- Wilson, B. (2012). *Sport & peace: A sociological perspective*. Ontario/Canada: Oxford University Press.

SPORT PARTICIPATION TO CREATE A DEEPER ENVIRONMENTAL IDENTITY WITH PRO-ENVIRONMENTAL BEHAVIORS

Vinathe Sharma-Brymer, Tonia Gray, and Eric Brymer

In this chapter we show how, if managed effectively, participation in some sports can cultivate a deeper environmental identity and pro-environmental behaviors. However, we argue that traditional sport will only be able to contribute to the development of an enhanced environmental identity if fundamental characteristics are changed. In the end, this might prove impossible. Instead, we call for a focus on outdoor and adventure sport (OAS) as an appropriate medium for the development of a deeper environmental identity. To do this we invoke an ecological dynamics perspective on sport and sport participation with its focus on the individual-environment relationship as it provides a principled framework for managing and implementing sport participation and the creation of a deeper environmental identity. We use this model to show how OAS might be designed to enhance environmental identity and pro-environmental behaviors.

In this chapter, the word *environment* specifically relates to outdoor, natural landscapes, and the natural world as differentiated from urban, sterile, fixed, or manicured sport pitches and grounds. The argument presented is that sport participation that explicitly balances the relationship between the individual and the environment is more likely to result in the development of a deeper environmental identity. Further, sports that focus on the individual-environment relationship are also more likely to result in positive behaviors towards the environment such as lifelong sustainable practices. Specifically, we present OAS as ideal activities for facilitating an acceptance that humans are part of the environment, promoting the environment over the task, sponsoring respect for the environment, and cultivating a deeper environmental identity.

Creating an environmental identity

The traditional notion of identity refers to a sense of self within a human world. The notion of an environmental identity extends beyond this anthropocentric idea of an “I” that is other or opposed to the natural world and instead encompasses a sense of self that is part of the natural world. The extent to which the sense of self incorporates the natural world has direct influence on how, as individuals, we relate to nature and how we behave towards nature. People with high environmental identities are more likely to behave in pro-environmental ways such as acting

sustainably and acting for conservation. If the natural world is considered other to a person's sense of self, nature will not be considered intrinsically valuable.

However, creating a deeper sense of environmental identity presents considerable challenges, not least because in order to deepen an identity, one first needs to develop an identity. What seems to be clear is that any real changes in positive behaviors towards the environment will most likely happen at an individual level. As a result, it is important that we understand how to develop and deepen individual environmental identity. This will entail changes in attitudes and everyday behavior (Gifford, 2007). Contemporary scholars in this area have proffered that environmental identity is developed from a range of possible mechanisms, including exceptional epiphany experiences in nature and/or the development of emotional connection to nature through the process of behavior change. Feelings of emotional connection to nature or unity with nature, defined as environmental identity, are a causal step to wanting to act pro-environmentally for the sake of the natural world (Schultz, 2002). A key factor in developing and creating a deeper environmental identity seems to be linked to developing emotional connection to nature through experientially recognizing that we are interconnected with nature (Schultz, 2002). In the following section we show how an ecological dynamics model can help us understand how participation in sport can develop and deepen environmental identity.

Ecological dynamics and environmental identity: a brief overview

Ecological dynamics is a framework that integrates the most salient ideas from ecological psychology and dynamical systems theory (Warren, 2006). It is a popular model of learning and performance in psychology, sport, and physical education (Araújo & Davids, 2009, 2011; Chow, Davids, Hristovski, Araújo, & Passos, 2011; Davids, Button, & Bennett, 2008). The model is ideally suited to understanding how sport participation can create a deeper environmental identity because a key presupposition is that behavior emerges from an *interactive relationship* between the individual and the environment. In contrast to traditional psychological theories of behavior change and learning that emphasize the role of individual attitudes and capabilities, this approach argues that the environment has an equal status to the individual – that is, a conducive environment is often more likely to have long-lasting effects on behavior than attempts to change the individual.

Ecological dynamics has an inherent foundation in the complexity sciences. In humans as complex systems this equates to a multi-dimensional perspective which includes the physical, social, cognitive, and emotional dimensions of what it means to be human. Constraints are the numerous variables that shape the continuous interactions of the individual components of the human system, limiting and enabling functional emergent behaviors in specific performance contexts. Changes in behavior, as a function of learning, emerge through experiences undergone in relation to constraints during interactions between learners and a performance environment (Chow et al., 2011; Davids, Button, & Bennett, 2008; Jacobs & Michaels, 2007).

Key aspects of the ecological dynamics model that relate to the aims of this chapter include the notion of representative design and the Gibsonian idea of affordances (Gibson, 1979). These concepts help explain how sport participation that encourages an interaction with the natural world can provide an essential conduit to the development of a deeper environmental identity. Representative design suggests that for learning to transfer beyond the original context – for example, the sport context, to the everyday world – the learning environment must effectively represent key aspects of the everyday world as it relates to the aims of the learning goals. This concept suggests that for sport to create a deeper environmental identity, the learning context must represent the key elements associated with the development of an environmental identity.

As we have seen in the section earlier, this means that sport participation needs to be deeply embedded within the natural world and be able to develop an emotional connection with the natural world.

Affordances are opportunities for behaviors that combine the objective nature of the environment with the subjective nature of an individual (Gibson, 1979). Affordances from this perspective are neither objective nor subjective, but rather are based on characteristics of both the individual and key ecological constraints of the environment. More recently, affordances have been recognized as environmental opportunities that invite action (Withagen, de Poel, Araújo, & Pepping, 2012). From an ecological dynamics perspective, the notion of affordances can be extended beyond opportunities for physical action to include opportunities for a variety of human behaviors such as those from the social, cognitive, and emotional dimensions.

Affordance theory suggests that theoretical perspectives that focus on the *form* and *structure* of nature (how nature looks) might be limited as a theoretical explanation for developing an environmental identity. That is, ideas that focus on developing an environmental identity through enhancing the aesthetics of nature might be limited in their ability to create a deeper environmental identity. Instead, ecological dynamics proposes that the *function* of nature is a more effective medium for analysis (Fiskum & Jacobsen, 2013). This is important, as it suggests that the development of an enhanced environmental identity is more likely to take place when individuals are physically active in nature in a manner that enhances their relationship with nature, emotional connection to nature, and the realization that they are part of nature. For this to happen, the *functional* aspects of the sporting environment need to invite or encourage an emotional connection to nature. In the following sections, we highlight how the ecological dynamics framework is useful for understanding how participation in some sports might create a deeper environmental identity and encourage pro-environmental behaviors. The proposition is that opportunities for an effective emotional connection between sport participants and the environment are essential and that this is only possible if appropriate affordances are available and the learning context represents the everyday world.

Traditional sport and environmental identity

Investment in traditional sports has attracted much debate in the last two decades, with various nations and governments grappling with challenges related to economic constraints, effects of globalization, changing policy structures, the changing nature of human health, and the state of the natural world (Lawson, 2005). These challenges directly affect sports participation and the related performance environment. At the same time, these global issues pose questions about how sport can develop identities that contribute to pro-environmental behaviors (Pfahl, 2013). These issues are made more complex because what constitutes environmental identity and pro-environmental behavior is still unclear in traditional sports with fluid policy and practice (Lindsey, 2008).

The fundamental goal of traditional sports is to train the participant to achieve a task and, in the process, cultivate a competitive mind-set (Barker et al., 2014). Even when traditional sports are presented as a vehicle for character development such as in schools or sports clubs, the focus is still on the completion of a task or activity (O'Connor, Alfrey, & Payne, 2012). This focus emphasizes the development of skills required to address the task and rarely considers the relationship between the participant and natural environment. The individual (or team) and the task are primary, and the natural environment is either ignored or ascribed a less important and utilitarian role. Most often this is limited to how best to use the competitive field or court for training or competition. From an ecological dynamics perspective, this would suggest that traditional

sport participation does not provide affordances for the development of an emotional connection to nature. Instead, the affordances offered might even detract from behaviors that lead to a deeper emotional connection to nature and reinforce a utilitarian perspective on nature. Equally, the notion of representative design is also not met. The sporting context, as exemplified by this example, is far removed from the context required to encourage connection to nature.

Despite this traditional focus, sport does have the potential to contribute to the development of participants' lifelong and meaningful association with the environment. However, this requires a different and perhaps broader perspective on sport participation, emphasizing the relationship between the individual and the natural environment. For sport to contribute to environmental identities, it needs to focus on developing responsible humans physically, morally, and socially. For a deeper environmental identity to happen, the emphasis on task and competition needs to be diminished. Instead, sport participation needs to be about encouraging a relationship with the environment, as the environment also potentially influences human attitudes and behavior (Gorely, 2005). However, as we have noted, in traditional sports the environment is relegated to a minor role. The focus needs to be on sport for the development of conscientious humans with an increased social awareness and community spirit (Lawson, 2005). Sport needs to encourage a non-anthropocentric perspective where humans act in a responsible way to preserve the total ecological system. If traditional sport is to contribute to the development of a deeper environmental identity, changes in attitudes, values, and beliefs need to occur (Barker et al., 2014; Camporesi & Knuckles, 2014; Gifford, 2007; O'Connor et al., 2012; White, 2013). It is our contention that traditional sport cannot make this leap. Instead, we must look to non-traditional sports, particularly outdoor and adventure sports.

The growing importance of OAS in creating a deeper environmental identity

Outdoor and adventure sports (OAS) are those non-traditional and independent sports that take place in the natural world. Various activities are encompassed within this definition, and examples include climbing, canoeing, mountain or bush walking, skiing, mountain biking, and caving. However, there are also many nuanced and alternative versions of outdoor sports such as fishing, nature walks, and forest school. There have been various ways of classifying OAS. For example, OAS have been classified in terms of the danger inherent within recreational activities where terms such as action sports, lifestyle sports, and fringe sports have been used interchangeably (Brymer & Sharma-Brymer, 2012). At their most extreme, OAS include activities such as waterfall kayaking, climbing without ropes, and proximity flying. OAS have also been associated with tourism activities and outdoor learning activities delivered within the school curriculum (Gray, 2005).

Over the last few decades, OAS have experienced a rapid growth in participation rates far outstripping the growth rates of many traditional sporting activities. In the UK, for example, a survey carried out by the peak body for sport estimated that whereas participation rates in OAS had increased in 2014, participation rates in most traditional sports had declined over the same period (Sport England, 2015). A report undertaken by the Outdoor Foundation (2013) in the United States estimated that in 2012, almost half the population (142 million people) were active participators of OAS. Beyond the traditional activities mentioned earlier, OAS have developed into diverse formats in different countries depending on cultural and environmental constraints and the creative minds of entrepreneurs. In essence, the broad range of activities classed as OAS means that there is most likely an activity that would suit most people.

Some of the elements that characterize these sports and set them apart from traditional sports are that they mostly take place in relation to the natural environment and they involve variables

that cannot always be controlled. For example, whereas a football field has uniform structured characteristics that are similar wherever the sport is played, the outdoor environment is constantly in flux. It is this “natural” element that encourages more people to immerse in OAS, creating opportunities to develop pro-environmental behaviors.

An inextricable link exists between immersion in outdoor activities, environmental identity, and pro-environmental behaviors (Gray & Birrell, 2015; Lloyd & Gray, 2014; Mullins, 2014). For example, a study by Gray and Birrell (2015) examined the environmental attitudes of high schools girls who participated in their research study *Touched By The Earth*. The girls reported feelings of love of nature, touching nature, and being touched by nature. The authors argued that mere knowledge and awareness-building programs are insufficient to develop affinity with nature; direct interactions and appropriate nature-based experiences are required to connect humans with nature. Lloyd and Gray (2014) expressed similar views as a result of a study undertaken with Australian primary school children.

Researchers investigating more adventurous versions of OAS have also reported that participants narrate that their experiences of interacting with nature trigger deeper environment identities (Brymer, 2009; Brymer, Downey, & Gray, 2009; Brymer & Oades, 2009). For example, a study investigating the environmental attitudes of people after ascending Mount Everest found that participants reported personal deep transformations resulting in pro-environmental behavior (Weare, 2003). The Everest mountaineer and filmmaker David Breashears (1999) described how climbing Mount Everest helped him come to terms with his own environmental identity, which resulted from his meaningful relationship with the natural landscape. His experience was not based on the “objectification” of nature as external to him. Breashears now runs a non-profit organization that uses adventure to inform about climate change in the Himalayan Region (GlacierWorks, 2016). Alison Gannet, a world champion extreme skier, winner of the National Geographic’s Woman Adventurer of the Year, and self-sufficient farmer is well known for her work on global warming issues, which she attributed to feeling a deep connection with the natural world (AlisonGannett.com, 2014). Her relationship with the living environment experienced through skiing triggered a decision to make life changes and embrace sustainable behaviors (Brown, 2010). The salient feature that triggered the deepening of their environmental identity stems from experiences of being one with nature and experientially learning through and about nature. This is not always described in positive terms, as even aversive experiences such as being vulnerable and feeling fear bring the participants to the realization about their place in the natural world. From an ecological dynamics perspective, the affordances in contexts highlighted earlier clearly invite emotional connection to nature. Further, representative design also seems to be adhered to as the learning context has filtered into the everyday life of those already exemplified. What is clear from these examples is that a sporting context that is directly in relation to the natural world has a good chance of developing and deepening the environmental identity of participants.

The realization for those OAS participants with high environmental identity is that in order to carry on with their OAS, they must respect the natural world for what and how it is in its natural form. This imperative is not only because human-caused damages to nature will negatively affect their sport, but also because nature has a value in its own right. In order to restrict and gradually reduce such damages, OAS practitioners come to learn to change their behaviors, which significantly alters their perceptions of their own self and their lived world. As Loland (2006) suggested, once the non-anthropocentric perspective has been developed, humans will reflect and relate to the natural world responsibly. However, although for most participants, OAS do develop and deepen their environmental identity, this is by no means guaranteed. From a naïve and anthropocentric perspective, OAS might present similar challenges to traditional

sports. It could be argued that OAS are detrimental to the natural world where rivers, mountains, forests, wilderness, and the oceans are merely resources for humanity's consumption (Brymer et al., 2009). From this perspective, nature is simply a setting for play or a battleground to test our worth or a goal to conquer. From this perspective, OAS would not be an ideal medium for the development of deeper environmental identities. Thus, although research suggests that OAS participation has the potential to deepen environmental identities, it is still important to consider how best to design participation opportunities and affordances to maximize benefits.

Ecological dynamics perspective and OAS: enhancing environmental identity

Sport participation does have the potential to develop and deepen environmental identity. However, as we have argued, this might mean that the notion of sport needs to change. OAS have been presented as potentially ideal formats for deepening environmental identities, provided they are delivered in accordance with appropriate principles. OAS delivered within a materialistic framework where nature is seen as a resource would not contribute to the development or deepening of an environmental identity. For sport participation to enhance environmental identity, it must provide opportunities for people to move towards a more ecocentric experience of the world. Therefore, it is important to determine how to design OAS participation that aims to enhance connection to nature and an identity that encompasses the natural world. As such, OAS theorists have called for an ecological approach to outdoor adventure that can respond to the need for the development of pro-environmental behaviors predicated on an environmental identity (Ingold, 2000; Mullins, 2014). We outlined the ecological dynamics model as an ideal framework for understanding how to develop learning contexts with the goal of enhancing environmental identity. In this section, we present our understanding of how this might be done.

As noted, arguably OAS have the potential to both connect people to nature and enforce the materialistic perspective where nature is merely a resource. In OAS, the learning context is often physically apart from and different from the everyday context, and participants are taken out of the everyday context to undertake OAS as specially designed programs such as in outdoor education or school camps. In these instances, those facilitating sport participation need to ensure that appropriate affordances for action are designed into the learning environment. However, recent research also suggests that nature provides many of these affordances automatically. For example, a study undertaken by Roe and Aspinall (2011) found that natural settings offered positive emotional affordances that transferred into everyday life.

Whereas the traditional perspective considers that affordances are exclusively physical and consisting of climbable features, apertures, shelter, moldable material, water, flat surfaces, smooth surfaces, graspable surfaces, attached objects, and non-rigid objects, the ecological model also suggests that affordances can work in the emotional domain (Brymer, Davids, & Mallabon, 2014). Drawing on research highlighted earlier that suggests that the development of emotional connection to nature is key to deepening environmental identity, OAS sports delivered as part of activities such as camps or school excursions need to relate to those behaviors and experiences that are most likely to enhance emotional connection to nature. For example, instead of OAS focusing on teaching the skills required to climb or kayak effectively or emphasizing competition, OAS learning contexts might provide opportunities that trigger emotional connection to nature. This does not suggest that activities need to be designed in order to trigger epiphanies – although these may help. In the first instance, this might just be in the form of smaller, more manageable positive emotions while undertaking OAS; for example, facilitators might emphasize the interactions with nature and provide opportunities to climb

trees or investigate butterflies. Accepting the principle of representative design, the ideal design would also ensure that the same affordances could be realized in the everyday context of the participant.

Environmental identity is arguably best developed at an early age (White, 2006). As such, the school camp or excursion might have a large role to play. However, excursions and camps are not available to everyone. Thus, it might also be important to rethink school sport programs to emphasize mainstream or more nuanced OAS. School sport could focus on lifelong physical activity rather than sport competition. In these instances, schools and communities might need to reassess affordances in local areas. For example, to encourage informal activity as well as deepen environmental identity, communities could develop playgrounds that involve trees and other natural areas rather than sterile concrete zones. Communities could encourage the climbing of trees in the street or the development of vegetable gardens in public areas. Schools might rethink playgrounds and design more naturalized playgrounds from a child's perspective (Sharma-Brymer & Bland, 2016). Playgrounds designed to encourage interactions with nature that are more wild and more able to stimulate curiosity, discovery, and imagination will be better at encouraging activity as well as connection with nature. Even for adults, opportunities to observe wildlife in natural settings have shown to be emotionally engaging and have a strong impact on knowledge, beliefs, and attitudes. Ballantyne and Packer (2011) emphasize the importance of opportunities for a reflective process for individuals while being in direct contact with nature.

Programs can also be designed to enhance the relationship to nature. For example, in Australia, the Nature Play organization has developed a passport system whereby young people can take part in organized activities that are outdoors and are designed to enhance physical activity and connection with nature. Young people are provided with a list of nature-based activities and can undertake nature walks or discovery events to find animals or plants or build dens or climb trees. Local parks are used as the context. However, to do this, schools and communities will need to rethink the notion of sport and the role of sport and ensure that affordances that encourage emotional connection to nature are designed into local communities.

Similarly, for adults, opportunities for sport and physical activity might need to move beyond traditional sports undertaken on manicured courts or fields. Instead, communities might need to rethink affordances that encourage connection to nature in local areas that suit the specific context of the community. Essentially, environments and programs need to allow individuals to express their behaviors in relation to affordances designed into learning tasks or local contexts. Using traditional activities to teach about environmental identity that do not allow experiential interactions with the natural world are not enough because that type of task design would only provide opportunities to learn about the environment rather than experience emotional connection to the environment.

Providing experiential opportunities to emotionally engage with nature facilitates changes in attitudes and behaviors. For some, such as Alison Gannett, this opportunity could trigger an instantaneous realization of values as a mountaineer or white water kayaker. In turn, this could result in responsive actions of preserving the health of hills and mountains, removing the litter from the mountain regions, or campaigning for endangered mountain wildlife, whereas, for others, the realization could be slower, taking months and a series of lessons/events before they are ready to take action. For them, respecting water sources, engaging in place-based learning, relating to local cultures and stories, and respecting local flora and fauna could become meaningful behaviors over their lifetimes. This process of behavior change occurs over time and needs to be supported by effective affordances in the learning context that are reflected in an everyday context.

In summary, we have argued that the ecological dynamics approach provides appropriate principles for understanding how sport participation can deepen environmental identity. In this section, we provided some examples of how that might happen. Affordances invite opportunities for emotional engagement with nature. OAS and their more nuanced cousins provide a means by which individuals and groups might pick up and realize these affordances.

Conclusion

Throughout this chapter, the authors have attempted to illustrate the importance of OAS in anchoring an affinity with nature. Compared to OAS, a greater number of participants practice traditional sports that focus on competition and task-achievement and relegate the natural world to a minor role. We argued that there needs to be a shift in thinking to a framework that emphasizes the experiential interaction with nature. Traditional sports may not be able to make this shift. In contrast, a cornerstone of OAS is about interacting with the environment. Using an ecological dynamics framework, we showed that, if managed effectively, mainstream OAS and their more nuanced cousins embody nature-immersive activities and provide an attunement to the natural world. Experiential nature-based activities in relation with appropriate affordances help foster connection to nature and a deeper sense of self in relation to nature. These are precursors to building foundations for pro-environmental ethics that underpin environmental stewardship in the Anthropocene era. We conclude that effective manipulation of the learner-environment relationship advances the potential for an enduring and deeper environmental identity. As a consequence of bringing OAS into every day and community settings, we might also encourage enhanced environmental health and better human well-being.

References

- AlisonGannett.com. (2014). *About Alison Gannett*. Retrieved from www.alisongannett.com/about-alison-gannett/
- Araújo, D., & Davids, K. (2009). Ecological approaches to cognition and action in sport and exercise: Ask not only what you do, but where you do it. *International Journal of Sport Psychology*, *40*, 5–37.
- Araújo, D., & Davids, K. (2011). What exactly is acquired during skill acquisition? *Journal of Consciousness Studies*, *18*, 7–23.
- Ballantyne, R., & Packer, J. (2011). Using tourism free-choice learning experiences to promote environmentally sustainable behaviour: The role of post-visit 'action resources.' *Environmental Education Research*, *17*, 201–215.
- Barker, D., Barker-Ruchti, N., Wals, A., & Tinning, R. (2014). High performance sport and sustainability: A contradiction of terms? *Reflective Practice*, *15*, 1–11.
- Breashears, D. (1999). *High exposure: An enduring passion for Everest and unforgiving places*. New York, NY: Simon & Schuster.
- Brown, D. J. (2010, December 20). Skier turned farmer Alison Gannett brings passion for environment to her new life on the land. *Denver Post*. Retrieved from www.denverpost.com/2010/12/20/skier-turned-farmer-alison-gannett-brings-passion-for-environment-to-her-new-life-on-the-land/
- Brymer, E. (2009). Extreme sports as a facilitator of ecocentricity and positive life changes. *World Leisure Journal*, *51*, 47–53.
- Brymer, E., Davids, K., & Mallabon, E. (2014) Understanding the psychological health and well-being benefits of physical activity in nature: An ecological dynamics analysis. *Journal of Ecopsychology*, *6*, 189–197.
- Brymer, E., Downey, G., & Gray, T. (2009). Extreme sports as a precursor to environmental sustainability. *Journal of Sport & Tourism*, *14*, 193–204.
- Brymer, E., & Gray, T. (2010). Developing an intimate relationship with nature through extreme sports participation. *Leisure/Loisir*, *34*, 361–374.

- Brymer, E., & Oades, L. (2009). Extreme sports: A positive transformation in courage and humility. *Journal of Humanistic Psychology, 49*, 114–126.
- Brymer, E., & Sharma-Brymer, V. (2012, November). *The significance of extreme sports: A qualitative analysis*. Paper presented at the International Congress on Political, Economic and Social Studies, Aligarh, India.
- Camporesi, S., & Knuckles, A. J. (2014). Shifting the burden of proof in doping: Lessons from environmental sustainability applied to high-performance sport. *Reflective Practice, 15*, 106–118.
- Chow, J.-Y., Davids, K., Hristovski, R., Araújo, D., & Passos, P. (2011). Nonlinear pedagogy: Learning design for self-organizing neurobiological systems. *New Ideas in Psychology, 29*, 189–200.
- Davids, K. W., Button, C., & Bennett, S. J. (2008). *Dynamics of skill acquisition: A constraints-led approach*. Champaign, IL: Human Kinetics.
- Fiskum, T. A., & Jacobsen, K. (2013). Outdoor education gives fewer demands for action regulation and an increased variability of affordances. *Journal of Adventure Education & Outdoor Learning, 13*, 76–99.
- Gibson, J. J. (1979). *The ecological approach to visual perception*. Hillsdale, NJ: Lawrence Erlbaum.
- Gifford, R. (2007). Environmental psychology and sustainable development: Expansion, maturation and challenges. *Journal of Social Issues, 63*, 199–212.
- GlacierWorks. (2016). *Mission*. Retrieved from <http://explore.glacierworks.org/en/#about/>
- Gorely, T. (2005). The determinants of physical activity and inactivity in young people. In L. Cale & J. Harris (Eds.), *Exercise and young people: Issues, implications and limitations* (pp. 81–105). New York, NY: Palgrave Macmillan.
- Gray, T. (2005). Exploring our connections and relationships with place and/or nature. In T. Dickson, T. Gray, & B. Hayllar (Eds.), *Outdoor and experiential learning: Views from the top* (pp. 9–12). Dunedin, NZ: Otago University Press.
- Gray, T., & Birrell, C. (2015). “Touched by the Earth”: A place-based outdoor learning programme incorporating the Arts. *Journal of Adventure Education and Outdoor Learning, 15*, 330–349.
- Ingold, T. (2000). *The perception of the environment: Essays in livelihood, dwelling and skill*. New York, NY: Routledge.
- Jacobs, D., & Michaels, C. (2007). Direct learning. *Ecological Psychology, 19*, 321–349.
- Lawson, H. A. (2005). Empowering people, facilitating community development, and contributing to sustainable development: The social work of sport, exercise, and physical education programs. *Sport, Education and Society, 10*, 135–160.
- Lindsey, I. (2008). Conceptualising sustainability in sports development. *Leisure Studies, 27*, 279–294.
- Lloyd, A., & Gray, T. (2014). Outdoor learning and the importance of environmental sustainability in Australian Primary Schools. *Journal of Sustainability Education, 9*(10), 1–15.
- Loland, S. (2006). Morality, medicine, and meaning: Toward an integrated justification of physical education. *Quest, 58*, 60–70.
- Mullins, P. M. (2014). Conceptualizing skill within a participatory ecological approach to outdoor adventure. *Journal of Experiential Education, 37*, 320–334.
- O’Connor, J., Alfrey, L., & Payne, P. (2012). Beyond games and sports: A socio-ecological approach to physical education. *Sport, Education and Society, 17*, 365–380.
- Outdoor Foundation. (2013). *Outdoor participation report*. Retrieved from www.outdoorfoundation.org/pdf/ResearchParticipation2013.pdf
- Pfahl, M. (2013). The environmental awakening in sport. *The Solutions Journal, 4*, 67–76.
- Roe, J., & Aspinall, P. (2011). The emotional affordances of forest settings: An investigation in boys with extreme behavioural problems. *Landscape Research, 36*, 535–552.
- Schultz, P. W. (2002). Inclusion with nature: The psychology of human-nature relations. In P. Schmuck & P. W. Schultz (Eds.), *Psychology of sustainable development* (pp. 61–78). Boston: Kluwer Academic.
- Sharma-Brymer, V., & Bland, D. (2016). Bringing nature to schools to promote children’s physical activity. *Sports Medicine, 46*, 966–962.
- Sport England. (2015). *Getting active outdoors: A study of demography, motivation, participation and provision in outdoor sport and recreation in England*. Retrieved from www.sportengland.org/media/3275/outdoors-participation-report-v2-lr-spreads.pdf
- Warren, W. (2006). The dynamics of perception and action. *Psychological Review, 113*, 358–389.

- Weare, G. (2003). Introduction. In C. Gee, G. Weare, & M. Gee (Eds.). *Everest: Reflections from the top* (pp. xii–xvii). London: Rider.
- White, M. A. (2013). Sustainability: I know it when I see it. *Ecological Economics*, *86*, 213–217.
- White, R. (2006) Young children's relationship with nature: Its importance to children's development & the earth's future. *Taproot*, *16*(2). Retrieved from www.whitehutchinson.com/children/articles/children-nature.shtml
- Withagen, R., de Poel, H. J., Araújo, D., & Pepping, G-J. (2012). Affordances can invite behavior: Reconsidering the relationship between affordances and agency. *New Ideas in Psychology*, *30*, 250–258.

SPORT AND INTERSPECIES EQUITY-BASED SUSTAINABILITY

Melanie Sartore-Baldwin

As natural resources continue to dwindle, more and more attention is being paid to the conservation, preservation, and sustainability efforts of organizations, in general, and sport organizations, in particular. Over the past two decades, sport and sport organizations have taken a great deal of responsibility in addressing their past, current, and future impact on the planet. Indeed, many sport organizations, sport leagues, athletic departments, and the like are now implementing environmental initiatives (Trendafilova, Babiak, & Heinze, 2013; Trendafilova, McCullough, Pfahl, Nguyen, Casper, Picariello, 2014). Within the United States, for example, the four major sports leagues have partnered on sustainability efforts with a national environmental group that actively advocates for the protection of natural resources (i.e., National Resource Defense Council [NRDC]). A global example, the Federation Internationale de Football Association (i.e., FIFA) has been involved with environmental protection programs for nearly a decade. Regional and local sport leagues and organizations have also formed partnerships with the intent of implementing pro-environmental strategies (Trendafilova, Kellison, & Spearman, 2014).

The difficulty with the successful implementation of the aforementioned efforts lies in the belief systems that surround the human use of natural resources such as land, water, wildlife, and so on, for one's own gain. Whereas researchers once focused on the natural environmental and geological changes occurring on the planet (i.e., the Holocene epoch), excessive human consumptive behaviors have led researchers to view the current era as Anthropocene (Crutzen & Stoermer, 2000; Steffen, Crutzen, & McNeill, 2007). As such, the focus has shifted to the central role that humans have played in the profound environmental, geological, and overall planetary changes of the past two centuries. Thus, the concepts of sustainability and sustainable development are fundamental in addressing the current relationship humans have with the planet and the emerging changes that continue to occur.

Whereas sustainability and sustainable development efforts predominately emphasize the current and future needs of humans (i.e., anthropocentric), incorporating the concept of social justice allows for other living beings and species to also be considered (i.e., ecocentric sustainability; see Imran, Alam, & Beaumont, 2014). Specifically, an ecocentric approach allows for the critical examination of the unjust processes that render the environment and its non-human inhabitants relatively powerless (see Feygina, 2013). Employing this perspective, the purpose of this chapter is to extend the discussion of sustainability and sustainable development beyond

the needs and interests of humans to incorporate the wants and needs of non-human animals within the sport context.

Sustainability and sustainable development

The concept of sustainability emerged from the conflicts among industrialization, consumerism, and the environment (Earnshaw, 1999). Specifically, as the world became more industrialized, the environment endured increased destruction. Prior to this time, the environment was believed to have infinite regenerative capabilities, which suggested that future generations of humans would experience the same infinite resources as their predecessors. The inaccuracy of this assumption became apparent as the exploitation of the Earth's resources began to exceed the Earth's regenerative abilities. As such, the complex nature of the ecological, economic, and social dimensions of sustainability emerged, as did the concept of sustainable development.

Sustainable development is identified within the United Nations World Commission on Environment and Development (1987) as "meeting the needs of the present without compromising the ability of future generations to meet their own needs" (para. 1). The International Union for Conservation of Nature and Natural Resources (IUCN) (1991) offers a similar definition of sustainable development as "improving the quality of human life while living within the carrying capacity of supporting ecosystems" (p. 10). Together these definitions highlight three foci: humans, Earth's finite resources, and more implicitly, economic development. More specifically, sustainable development has been historically human-centric and assumes that quality of life is related to economic wealth and through consumption (Palmer, Cooper, & van der Vorst, 1997).

Equity-based sustainability

Despite the predominant interpretation of sustainable development as a way to address present and future human needs, the importance of biodiversity has been the focus for some. Approaching sustainable development as an issue of social and environmental justice, Haughton (1999) identifies five interconnected equity-based principles that guide the process of sustainability development. The first two principles, intergenerational equity or futurity and intra-generational, refer to establishing better equity across and within generations, respectively. Specifically, intergenerational equity is concerned with the distribution of resources from one generation to another and intra-generational equity is concerned with the processes by which resources are distributed within the current generation. The third principle, geographical equity, involves considering the impact of local decisions and actions at the global level. Haughton also refers to this as transfrontier responsibility. The fourth principle, procedural equity, also discussed as the participation principle, focuses on the right of access to information for all parties affected by negative environmental impacts. The fifth and final principle, inter-species equity, "places the survival of other species on an equal basis to the survival of humans" (p. 236) and emphasizes the importance of preserving ecosystems and retaining biodiversity.

Although Haughton's (1999) equity principles do not exist mutually exclusive from one another, sustainability's human-centered history has led some principles to receive a great deal more of attention and action than others. Adopting an equity-based perspective, however, does require that the interests of all are incorporated, not just those of humans. As Earnshaw (1999) notes, the anthropocentric approach to the traditional concepts of sustainability and sustainable development promotes the exploitation of resources for the sole purpose of maintaining human

quality of life. Earnshaw refers to conventional sustainability as exploitation-based sustainability because it “regards all living and non-living systems other than the human species as means by which to maximize wealth” (p. 116). Exploitation-based sustainability thus views the Earth, its ecosystems, and the non-human animals within them as natural, renewable resources for humans to use as they see fit while seeking a way to ensure that future generations can use them to suit their own needs.

In contrast to anthropocentric sustainability and sustainable development, an ecocentric approach recognizes the importance of protecting the health of Earth’s ecosystems and all living entities housed within them (Imran et al., 2014). From this perspective, non-human beings have no less right to life than humans and as such, sustainability involves the equitable protection of all life. Thus, rather than viewing ecosystems, non-human animals, and the environment as resources and objects needed to fulfill the needs of the current and future generations, these entities are considered subjects whose needs must also be met to ensure survival (Imran et al., 2014). Adopting an ecocentric perspective, Earnshaw (1999) identifies the necessity to transition from the traditional exploitation-based sustainability approach to an equity-based sustainability approach. Focusing specifically on interspecies equity, Earnshaw points out that non-human animals value many of the same fundamental rights that humans possess. For example, just as humans value the satisfaction of their most basic wants and needs (e.g., food, clothing, shelter; see Maslow, 1943), so, too, do animals wish to satisfy their most basic wants and needs (Dawkins, 2006). Further, animals also wish to live free from harm, fear, pain, and exploitation (Broom, 2016; Veenhoven, 2000). Thus, although not identical to humans, non-human animals experience and enjoy their own quality of life and wish not to suffer physically, emotionally, and psychologically (Earnshaw, 1999).

A great deal of research affirms that non-human animals are sentient creatures (see Duncan, 2006), although some are reluctant to believe or accept that animals possess awareness, emotions, cognition, and senses. This latter perspective is the result of ideological belief systems that have hierarchically placed humans above all other living beings. For some, this belief system is rooted in cultural and religious beliefs; for others, the use and abuse of non-human animals is financially driven and legally maintained (Francione, 1996). Regardless of its manifestation, however, this ideology, or “set of socially shared beliefs that legitimates an existing or desired social order” (Nibert, 2003, p. 8), represents speciesism, a system akin to sexism, racism, ethnocentrism, and so on (Gruen, 2009).

Speciesism and anthroparchy

Singer (1975) defined speciesism as “a prejudice or bias in favor of the interests of members of one’s own species and against those of members of other species” (p. 6). Many animal advocates have adopted this definition; however, Nibert (2003) suggests a broader definition that better addresses the structural causes of the oppression of non-human animals (i.e., speciesism as an ideology). Indeed, the institutional processes that promote and normalize human domination over all other life have structured the relationships humans possess with other species (Cudworth, 2014; Gruen, 2009; Nibert, 2002). Cudworth (2005) refers to the institutions, processes, and practices through which these relationships exist as anthroparchic and suggests that species domination intersects with gender, race, ability, social class, and other socially constructed systems of dominance. Cudworth’s (2005) conceptualization of anthroparchy differs from speciesism in that it describes a system of complex relations that establish human domination over the natural world, not just the ideological system of non-human animal oppression (i.e., speciesism).

Cudworth (2011, 2014) defines dominance as “a general descriptor for systemic relations of power that inhibit the potential of an individual organism, group, micro or macro landscape, to ‘flourish’” (Cudworth, 2014, p. 28). Adopting this definition allows for a broad examination of how and why human domination of the environment and the non-human life housed within it varies in form and practice around the world. Thus, within dominant systems, specific types and practices of power that shape anthroparchy can be identified, as can the degree and amount of social domination present. Calvo (2008) focuses on three primary types and practices of power that represent the different degrees of human domination: oppression, exploitation, and marginalization. Oppression refers to the extreme degrees to which humans apply dominatory power over other species. Exploitation refers to the use of animal materials and behaviors as a resource from which humans benefit. Marginalization is akin to anthropocentrism, as it refers to the rendering of species to the extreme periphery, thus making them nearly insignificant.

Certain contexts typify anthroparchy through the relationships that humans and nature have within them. Cudworth (2011, 2014) suggests these contexts involve five primary areas: production, domestication, polity, violence, and anthropocentrism. Production refers to the relationships formed with nature as humans produce needed items such as food and fuel. As Calvo (2008) notes, modern industrialization has greatly affected this relationship. Domestication and reproduction of plants and animals involve their breeding for specific purposes and can refer to the actual and symbolic beings that are safely domesticated or dangerously not. The third area, the political, involves the institutional entities that can create, perpetuate, and change systemic domination either directly or indirectly. The fourth area is systemic violence, the likes of which can affect animals just as it does humans. Lastly, relations within an anthroparchal society are human-centric and, as such, categorize non-human animals as “others.”

In sum, anthroparchal cultures are human-centric, systematic, and emphasize the social dominance humans possess over all other living entities (Calvo, 2008). Through various levels and degrees of oppression, exploitation, and marginalization, this domination is reaffirmed in contexts where animals and their habitats are used by humans to produce goods and services and where animals are domesticated and reproduced at will and controlled through violence. Further, laws and social norms exist to support, and in some cases contest, these practices. Although the majority of discussions about anthroparchy have focused on the agricultural industry (e.g., Calvo, 2008; Cudworth, 2011, 2014), the central tenets of anthroparchy are present within multiple other industries, including the sport industry. The origins and effects of anthroparchy within sport can be addressed by incorporating discussions of animal standpoint theory and interspecies equity-based sustainability.

Animal standpoint theory and sustainability

According to animal standpoint theory (AST), non-human animals have been vital factors in shaping human thoughts, morals, experiences, and overall history (Best, 2009, 2013, 2014). From this perspective, the existence of humans cannot be separated from the existence of non-humans across all contexts of life, including sport. AST puts forth that human domination over non-human animals represents power relations that are destructive, violent, and harmful for humans, non-human animals, and the Earth as a whole (Best, 2009, 2013, 2014). By adopting the animal standpoint, a great deal can be learned about the origins of systems of domination, humans relations with non-human animals, and the environmental impact of animal exploitation. Further, and as Best (2009) points out, the dichotomization of humans and animals represents an opposition that “underpins oppositions between reason/emotions, thought/body, men/women,

white/black, and Western/non-Western” (p. 16). Thus, AST incorporates other systems of domination (e.g., patriarchy) to examine the interaction between humans and non-humans within the natural world.

Whereas the animal standpoint can be used to examine the origins of anthroparchy, equity-based sustainability seeks to find and address the inequities that exist within anthroparchal cultures (Best, 2009; Earnshaw, 1999). More specifically, equity-based sustainability works from a decision-making model whereby all voices are heard and all entities considered. With a particular focus on interspecies equity, Earnshaw emphasizes that the relationships between humans and non-human animals must be approached holistically such that the welfare of individuals and their cultures be upheld. Additionally, the welfare of each individual animal, its animal species, and the animal kingdom as a whole, are considered. Lastly, Earnshaw suggests that individual natural habitats (e.g., forests and oceans), as well as the Earth as a whole, must be considered. Thus, “interspecies equity requires a whole paradigmatic shift in thinking about equity and the role of other species in the world” (Earnshaw, 1999, p. 124). Although this shift is needed within and across every culture, context, and industry (e.g., film, tourism, agriculture), sport offers a unique opportunity to create change, as it is one of the most visible, flexible, and prolific institutions on the planet.

Anthroparchy and sport

Human domination of the environment and non-humans within the sport context is well established. For example, some of the earliest sporting events pitted animal against animal and animal against man for the purposes of entertainment. Although condoned at the time, the modernization and civilization of society has led to public scrutiny and disapproval of such events (Dunning, 1999). Despite public condemnation, however, many animal blood sports (i.e., games and competitions involving animals; see Atkinson & Young, 2008) continue to take place. For example, events like bullfighting, cockfighting, animal baiting, fox hunting, dog racing, and dog fighting all occur under the guise of “sport.” The use of animals within sport also continues with regard to sport equipment. Specifically, the materials provided by the dead bodies of animals make up things like baseball gloves, golf bags, saddles, and so on (Wade, 1996). Animals are also depicted as representations of teams at various levels, and their presumed characteristics are used to promote toughness and primality, as well as create sport fandom and sport identity (Callais, 2010; Dalakas & Rose, 2013; Slowikowski, 1993).

As noted previously, anthroparchal cultures are formed through the convergence of five areas that shape the power relations between humans and nature (Cudworth, 2014). The domination of humans within sport can be understood by examining these areas and the social relations within them. For example, humans use natural resources, such as wood and animal hide, for the *production* of sport equipment, facilities, and venues. Likewise, non-human animals are used to create animal sport as a whole. Plants and animals are *domesticated* and reproduced by humans for the specific purposes of sport participation and consumption. For instance, racehorses are often selectively bred from championship bloodlines. Specific types of grass are bred for the racetracks on which these horses will compete, as well as for golf courses and other sporting venues. Various forms and degrees of *violence* are used by humans to “control” animal athletes, as things like electric cattle prods, spurs, whips, and crops are all used to elicit desired behaviors. Animals are also killed and dismembered to make the aforementioned sport equipment (e.g., baseball gloves and saddles).

Whereas the safety and well-being of human athletes are of primary concern and regulated by *governmental laws and organizational policies*, the same is not ensured for animal athletes. Animal

athletes have no voice and cannot report abuses and mistreatment. As a result, there is no assurance that the rules and regulations established to protect animal athletes, the likes of which are quite lacking, are being followed. In addition, the rules and regulations that do exist reinforce the use of animals in sport. For example, the Professional Rodeo Cowboys Association (PRCA) has a list of 60 rules that are presumed to ensure the proper treatment of livestock in their competitions. Although it is important that these rules focus on the welfare of the livestock, they fail to recognize animal athletes as possessing rights, cognitions, emotions, and so on. Thus, humans are dominant, as they determine what they believe to be what is best for these animal athletes and use animals to satisfy the *interests of humans*.

The result of production, domination, violence, polity, and anthropocentrism, animals and other non-human living species suffer oppression, exploitation, and marginalization. As Cudworth (2014) points out, however, the effects of human domination vary. For example, the thoroughbred racehorse who has won the Triple Crown will experience domination differently than the Sumatran tiger whose likeness is used as a school mascot. Similarly, the cow that was slaughtered to make burgers for sport spectators at the stadium will experience human domination differently than the Malamutes and Siberian huskies used for sled-dog racing. These distinctions are important to consider and can perhaps be better explained by differentiating between animals used as sport participants and animals used as sport-related materials.

Animal as participants

Morgan and Meier (1995) distinguish between three types of animal sport. The first emphasizes human athletic excellence and includes events such as horse racing, polo, dressage, jumping, eventing, and certain rodeo events. The second type involves human athletic skill by pitting human against animal in events such as hunting, fishing, bull fighting, and so on. The third type does not involve human athleticism, but rather animal athletic prowess, and involves pitting animals against each other in deadly combat. Events within this third category include cockfighting, dog fighting, dog racing, and horse fighting. Although the events and participants distinguish each type of animal sport, one commonality exists across all three – the animal athlete is not a voluntary participant. Indeed, animal sport is human-centric and produced through the use of coercion and violence between human and animal. The animal athletes have been domesticated and are often bred for the sole purpose of killing, fighting, or racing. These activities are well established and often sanctioned through laws and other regulatory bodies.

A complete historical review of the uses and abuses of animals within sport is beyond the scope of this chapter; however, the manner in which animals have come to serve humans within this context can be attributed to anthroparchal norms. The anthroparchal relations that constitute and reinforce these norms include marginalization, oppression, and exploitation, and they coalesce with the intersection of capitalism, patriarchy, and social class to create and reinforce human dominance (Cudworth, 2011, 2014). The impact of these other structural inequalities is evident within the different types of sport that involve the use of animals. For example, although dog fighting was common and accepted among royals and aristocrats during the 19th century, its modern existence is predominantly affiliated with the lower and middle classes (Evans, Gauthier, & Forsyth, 1998). Thoroughbred horseracing, on the other hand, is predominately associated with the upper class and elite, as some racehorses are purchased for millions of dollars and, likewise, millions of dollars are placed on the outcome of the races in which horses compete. Conversely, dogs used for dog fighting may be acquired from local shelters or obtained online for little or no cost. Horseracing is legal, and to a large extent celebrated however, dog

fighting are illegal and linked to nefarious activities like drug trafficking, homicide, rape, and illegal gambling (Forsyth & Evans, 1998).

Events like dog fighting and cockfighting also serve as an extension of masculinity, as men are the primary partakers of these events and the behaviors within the ring are traditionally masculine (Kalof & Taylor, 2007; Martin, 1984). The performance of these animals, good and bad, is viewed as a reflection of the owner, thus suggesting that, for example, the toughest, most aggressive dog will win and therefore be owned by the toughest, most aggressive man with high social standing (Evans et al., 1998; Kalof & Taylor, 2007). Hunting and hunting weaponry also possess gendered and sexualized associations, as they glorify masculine dominance through killing, violence, and the use of weapons (Kalof, Fitzgerald, & Baralt, 2004). Bow hunting in particular has been described as “manly, exciting, intimate, and – above all – *sexual*” (Kalof et al., 2004, p. 240, original emphasis). Further, the arrow itself has been described as a phallic symbol (Langness, 1974).

The aforementioned examples support the contention that sport is anthroparchal. Indeed, within sport, humans have formed relations with animals such that humans possess power over all other species and exert it through oppression, exploitation, and marginalization (Cudworth, 2011). Although the effects of these relations vary as a result of other structural inequalities (e.g., patriarchy), the fundamental point is that sport exists as a system of human domination over animals and nature. This domination is not only evident within animal sport where animals are forced to be participants, but also through the use of animal-based products, materials, and items within the sport context.

Animals as materials and items

Animal body parts are used as sport equipment, their bodies are used to feed spectators at sporting events, and their likenesses and caricatures are used to represent teams (i.e., mascots). Thus, animals have prominent roles in the sport experience even when not being forced to participate – that of consumption and profit generation. For instance, cowhide from an estimated 3,000 cows is used to supply the National Football League (NFL) with enough footballs for one season (Yurcaba, 2015). According to the National Hot Dog and Sausage Council, an estimated 21.4 million hot dogs were consumed across all Major League Baseball (MLB) venues during 2014. In 2015, an estimated 18.5 million hot dogs were consumed at MLB venues. According to the National Chicken Council, 1.3 million chicken wings, weighing 162.5 million pounds, were consumed during the 2016 Super Bowl matchup between the Carolina Panthers and the Denver Broncos. Although the number of animals who lost their lives is not known for these and other consumptive statistics, the sheer volume of the animal products consumed suggests that billions of animals perish to feed and supply sport fans each year.

There are a few cruelty-free options for sport equipment, but to date, no sport franchise has adopted the use of these goods. However, some sport franchises and venues have taken measures to address the current level of meat consumption within the United States, as the production of meat and other animal-based products is a primary contributor to climate change (Hedenus, Wirsenius, & Johansson, 2014). Some examples include Capital One Field, the home of the University of Maryland Terrapins, which now offers vegan and vegetarian options such as hummus, veggie dogs, fresh fruit cups, and byrd salad. Several NFL stadiums also offer a variety of vegan and vegetarian options. Lincoln Financial Field, home of the Philadelphia Eagles, offers options such as black bean burgers, veggie tacos, and breaded eggplant hoagies to their non-meat-eating patrons. Further, some notable athletes (e.g., Joe Namath, Venus Williams, and ultramarathon runner Vlad Ixel) have also promoted their own vegetarian and vegan diets with the intent of advocating for animals and the planet.

The production and consumption of meat is not only harmful to the planet, but it is associated with manhood, power, virility, and is thus, a symbol of patriarchy (Adams, 1990; Hedenus et al., 2014). Within sport, a male-dominated domain (see Messner, 1992), patriarchy affects human domination over other species in three primary ways. First, the hunting and killing of animals for meat is a way in which humans, primarily males, assert their power over nature and other species (Kalof et al., 2004). Second, the consumption of meat by sport spectators, as mentioned previously, is not only excessive, but also historically synonymous with the male sport experience (Brady & Ventresca, 2014). Lastly, the belief that protein obtained from meat is needed to gain strength and muscle has normalized the consumption of meat as a necessity for athletes, particularly male athletes (McGann, 2004). These connections between masculinity and meat within sport are difficult to challenge, as they are deeply rooted in sport's masculine culture. There have been instances, however, whereby traditionally masculine athletes like NFL linebacker Arian Foster have adopted a vegan diet and maintained their athletic prowess. Interestingly, Foster's decision to become vegan was received with both gendered and racialized commentary within the popular press (Brady & Ventresca, 2014), suggesting that the media is perhaps the primary perpetuator of many anthroparchical norms.

Another way in which animals serve humans in the sport context is by representing sport teams as mascots. The selection of an animal for a mascot is based upon the characteristics of the animal and the belief that the representation of the animal will bring luck (Slowikowski, 1993). Animals chosen to represent a sport team are selected on the basis of presumed aggressive and vicious tendencies or because they represent honor at a larger level (Slovenko, 1994). Although there are some exceptions, docile animals are not typically selected as mascots. The connection established between fans and their mascot can be incredibly powerful, as it can influence emotions, attitudes, and behaviors (Callais, 2010). Mascots are used to generate revenue, yet rarely, if ever, do the animals whose likenesses are being used receive any monetary assistance. In fact, in most instances, little to no effort is made to preserve and enhance the livelihood, conditions, and experiences of the animals that mascots represent, nor are fans aware of the plight that endangered animal mascots suffer (cf. Baltz & Ratnaswamy, 2000).

Taken together, the examples used in explaining animal sport and the use of animals and animal products within sport exemplify anthroparchy. Further, they suggest a profound need to better understand sport's anthroparchal culture. This is particularly true with regard to the issues of sport-related sustainability and sustainable development which, to date, have lacked any focus on interspecies equity. The following section offers suggestions for researchers and practitioners to integrate the interests of all species and natural habits into discussions of sustainability.

Future directions

There exists a degree of responsibility for sport researchers and practitioners to address the harm that occurs from exploiting taken-for-granted resources within the sport context. Several scholars and research studies have addressed the need to investigate the environmental impact of the sport industry (e.g., Thibault, 2009), but a gap exists in the literature regarding the integral role that animals and their natural habitats have played in sport. Although sport and sport organizations are involved with sustainability efforts (Trendafilova et al., 2013; Trendafilova et al., 2014), the interspecies equity-based sustainability approach has yet to receive any research or practical attention. Further, no consideration has been given to the anthroparchal culture present within sport. Research on the complexities of anthroparchy within sport is needed to initialize and promote interspecies equity-based sustainability.

For interspecies equity-based sustainability to occur, a change in mentality and values is needed. Currently, humans operate from an exploitive and self-serving standpoint rather than

one that is based on equity. Rather than maintaining ignorance about the culture of human domination over all other living entities, a dialogue that incorporates the interests of all living beings must begin. Animals and their habitats cannot advocate for themselves, so animal rights advocates must be included in the discussion, as they can best communicate the animal standpoint. For example, the ways in which anthroparchy is maintained (i.e., through production, domestication, polity, violence, and human centrism) cannot be challenged without including the perspective of the animal standpoint. Likewise, anthroparchal norms cannot be broken down without changing the deeply entrenched exploitative acts and processes through which they are maintained; this, too, requires the animal standpoint. As Best (2009) points out, few researchers have been able to see beyond their own humanist bias when examining human and non-human relations. Adopting the animal standpoint is needed to understand the importance of non-human animals within human life and the ways in which human domination over other species creates instability and conflict in human relations to one another and the planet as a whole. Sustainability researchers would do well to incorporate the animal standpoint into future works, particularly those involving equity-based sustainability.

There exists a connection between all life forms and life systems. Correspondingly, a connection exists between different types of equity such that establishing equity across species is necessary to the overall sustainability of the planet (Collin & Collin, 1993). Simply put, sustainability efforts and initiatives will not be successful until they are equity based and the public recognizes the importance of animals and their habitats to human existence (Earnshaw, 1999). Casper and colleagues' (Casper, Pfahl, & McCullough, 2014; Casper, Pfahl, & McSherry, 2012) work within United States' intercollegiate athletics system suggests that sport fan environmental behavior can be positively influenced by educational initiatives about sustainability put in place by athletic departments. Although these educational initiatives have not included information about animals, there is some indication that doing so could result in change. Preliminary data suggest that sport fans who highly identified with their sport teams are interested in learning more about how to conserve the endangered species that represents their mascot (Sartore-Baldwin & McCullough, 2016). Indeed, sport organizations are in an advantageous position whereby they can design campaigns around equity-based sustainability with the intent of creating positive for change for the planet and all of its inhabitants.

Conclusion

This chapter presented a unique explanation of sport as an anthroparchal domain by examining the uses and abuses of animals in sport. By adopting the animal standpoint as a way to examine and better understand the origins of anthroparchy, the integral ways in which animals have been omnipresent within sport and the sport experience were identified. Further, by integrating interspecies equity-based sustainability within broader discussions of sustainability, a way to challenge anthroparchal norms was suggested. Indeed, although not often acknowledged, sport is a context in which animals have been vital in shaping the sport experience for spectators and participants alike. Humans have traditionally overlooked this, however, as the primary focus has been on shaping, maintaining, and reproducing sport as it currently exists. As such, animals and the environment have suffered greatly. By adopting sustainability efforts within sport that promote and incorporate the importance of the health and well-being of all animal species in the overall health and well-being of humans, the environment, and the planet, the sport domain could make a profound impact on the larger sustainability movement.

References

- Adams, C. J. (1990). *The sexual politics of meat – a feminist vegetarian critical theory*. New York, NY: Continuum International Publishing Ltd.
- Atkinson, M., & Young, K. (2008). *Deviance and social control in sport*. Champaign, IL: Human Kinetics.
- Baltz, M. E., & Ratnaswamy, M. J. (2000). Mascot conservation programs: Using college animal mascots to support species conservation efforts. *Wildlife Society Bulletin*, 28, 159–163.
- Best, S. (2009). The rise of critical animal studies: Putting theory into action and animal liberation into higher education. *Journal of Critical Animal Studies*, 7(1), 9–52.
- Best, S. (2013). *Animal liberation and moral progress: The struggle for human evolution*. Lanham, MA: Rowman & Littlefield.
- Best, S. (2014). *The politics of total liberation: Revolution for the 21st century*. New York, NY: Palgrave Macmillan.
- Brady, J., & Ventresca, M. (2014). “Officially a vegan now”: On meat and renaissance masculinity in pro football. *Food and Foodways*, 22, 300–321.
- Broom, D. M. (2016). Considering animals’ feelings. *Animal Sentience: An Interdisciplinary Journal on Animal Feeling*, 1(5), 1–11.
- Callais, T. M. (2010). Controversial mascots: Authority and racial hegemony in the maintenance of deviant symbols. *Sociological Focus*, 43, 61–81.
- Calvo, E. (2008). “Most farmers prefer blondes”: The dynamics of anthroparchy in animals’ becoming meat. *Journal of Critical Animal Studies*, 6(1), 32–44.
- Casper, J. M., Pfahl, M. W., & McCullough, B. (2014). Intercollegiate sport and the environment: Examining fan engagement based on athletics department sustainability efforts. *Journal of Issues in Intercollegiate Athletics*, 7, 65–91.
- Casper, J. M., Pfahl, M. W., & McSherry, M. (2012). Athletics department awareness and action regarding the environment: A study of NCAA athletics departments sustainability practices. *Journal of Sport Management*, 26, 11–29.
- Collin, R. M., & Collin, R. W. (1993). Where did all the blue skies go? Sustainability and equity: The new paradigm. *Journal of Environmental Law and Litigation*, 9, 399–460.
- Crutzen, P. J., & Stoermer, E. F. (2000). The “Anthropocene”. *IGBP Newsletter*, 41, 17–18.
- Cudworth, E. (2005). *Developing ecofeminist theory: The complexity of difference*. Basingstoke: Palgrave Macmillan.
- Cudworth, E. (2011). *Social lives and other animals*. New York, NY: Palgrave Macmillan.
- Cudworth, E. (2014). Beyond speciesism: Intersectionality, critical sociology and the human domination of other animals. In N. Taylor & R. Twine (Eds.), *The rise of critical animal studies: From the margins to the centre* (pp. 19–35). New York, NY: Routledge.
- Dalakas, V., & Rose, G. (2013). Developing brand identity in sport: Lions, and tigers, and bears oh my. In M. P. Pritchard & J. L. Stinson (Eds.), *Leveraging brands in sport business* (pp. 109–122). New York, NY: Routledge.
- Dawkins, M. S. (2006). Through animal eyes: What behaviour tells us. *Applied Animal Behaviour Science*, 100(1–2), 4–10.
- Duncan, I. J. H. (2006). The changing concept of animal sentience. *Applied Animal Behaviour Science*, 100(1–2), 11–19.
- Dunning, E. (1999). *Sport matters: Sociological studies of sport, violence and civilization*. London, UK: Routledge.
- Earnshaw, G. I. (1999). Equity as a paradigm for sustainability: Evolving the process toward interspecies equity. *Animal Law*, 5, 113–146.
- Evans, R., Gauthier, D. K., & Forsyth, C. J. (1998). Dogfighting: Symbolic expression and validation of masculinity. *Sex Roles*, 39, 825–838.
- Feygina, I. (2013). Social justice and the human–environment relationship: Common systemic, ideological, and psychological roots and processes. *Social Justice Research*, 26, 363–381.
- Forsyth, C. J., & Evans, R. D. (1998). Dogmen: The rationalization of deviance. *Society and Animals*, 6, 203–218.

- Francione, G. L. (1996). Animals as property. *Animal Law*, 2, i–vi.
- Gruen, L. (2009). The faces of animal oppression. In A. Ferguson & M. Nagel (Eds.), *Dancing with Iris* (pp. 161–172). New York, NY: Oxford University Press.
- Haughton, G. (1999). Environmental justice and the sustainable city. *Journal of Planning Education and Research*, 18, 233–243.
- Hedenus, F., Wirsenius, S., & Johannson, D. J. A. (2014). The importance of reduced meat and dairy consumption for meeting stringent climate change targets. *Climate Change*, 124, 79–91.
- Imran, S., Alam, K., & Beaumont, N. (2014). Reinterpreting the definition of sustainable development for a more ecocentric reorientation. *Sustainable Development*, 22, 134–144.
- International Union for Conservation of Nature and Natural Resources. (1991). *Caring for the Earth: A strategy for sustainable living*. London, UK: Earthscan.
- Kalof, L., Fitzgerald, A., & Baralt, L. (2004). Animals, women, and weapons: Blurred sexual boundaries in the discourse of sport hunting. *Society & Animals*, 12, 237–251.
- Kalof, L., & Taylor, C. (2007). The discourse of dog fighting. *Humanity & Society*, 31, 319–333.
- Langness, L. L. (1974). Ritual, power, and male dominance. *Ethos*, 2, 189–212.
- Martin, G. (1984). The cockfight in Andalusia, Spain: Images of the truly male. *Anthropology Quarterly*, 57, 60–70.
- Maslow, A. H. (1943). A theory of human motivation. *Psychological Review*, 50, 370–396.
- McGann, P. (2004). Eating muscle: Material-semiotics and a manly appetite. In N. Tuana, W. Cowling, M. Harrington, G. Johnson, & T. MacMullen (Eds.), *Revealing male bodies* (pp. 83–99). Bloomington, IN: Indiana University Press.
- Messner, M. (1992). *Power at play*. Boston, MA: Beacon Press.
- Morgan, W. J., & Meier, K. (1995). *Philosophic inquiry in sport*. Champaign, IL: Human Kinetics.
- Nibert, D. (2002). *Animal rights/human rights: Entanglements of oppression and liberation*. Lanham, MD: Rowman & Littlefield.
- Nibert, D. (2003). Humans and other animals: Sociology's moral and intellectual challenge. *International Journal of Sociology and Social Policy*, 23(3), 4–25.
- Palmer, J., Cooper, I., & van der Vorst, R. (1997). Mapping out fuzzy buzzwords – who sits where on sustainability and sustainable development. *Sustainable Development*, 5, 87–93.
- Sartore-Baldwin, M. L., & McCullough, B. (2016). *The connection between sport fans and their endangered species animal mascots: What do they know and what can they do?* Manuscript submitted for publication.
- Singer, P. (1975). *Animal liberation*. New York, NY: HarperCollins.
- Sloveno, R. (1994). Politically correct team names. *Journal of Psychiatry and Law*, 22, 585–592.
- Slowikowski, S. (1993). Cultural performance and sports mascots. *Journal of Sport & Social Issues*, 71, 23–33.
- Steffen, W., Crutzen, P. J., & McNeill, J. R. (2007). The anthropocene: Are humans now overwhelming the great forces of nature? *AMBIO: A Journal of the Human Environment*, 36, 614–621.
- Thibault, L. (2009). Globalization of sport: An inconvenient truth. *Journal of Sport Management*, 23, 1–21.
- Trendafilova, S., Babiak, K., & Heinze, K. (2013). Corporate social responsibility and environmental sustainability: Why professional sport is greening the playing field. *Sport Management Review*, 16, 298–313.
- Trendafilova, S., Kellison, T. B., & Spearman, L. (2014). Environmental sustainability in sport facilities in east Tennessee. *Journal of Facility Planning, Design, and Management*, 2(1), 1–10.
- Trendafilova, S., McCullough, B., Pfahl, M., Nguyen, S. N., Casper, J., & Picariello, M. (2014). Environmental sustainability in sport: Current state and future trends. *Global Journal on Advances in Pure & Applied Sciences*, 3, 9–14.
- United Nations. (1987). *Our common future*. Oxford: Oxford University Press.
- Veenhoven, R. (2000). The four qualities of life: Ordering concepts and measures of the good life. *Journal of Happiness Studies*, 1, 1–39.
- Wade, M. L. (1996). Sports and speciesism. *Journal of the Philosophy of Sport*, 23, 10–29.
- Yurcaba, J. (2015). *How many cows does it take to make a football?* Retrieved from www.simplemost.com/many-cows-take-make-football/

WATER AND SPORTS FACILITIES

Usage, issues, and solutions

Kyle S. Bunds

Despite the Samsung commercial trying to sell waterproof phones to consumers telling us that the world is about to have more water (a contestable claim in terms of what that really means – not worth diving into here), roughly 97.5 percent of the world’s water is non-potable salt water, and the United Nations (2014) estimates that 1.8 billion people in 2025 will be experiencing a clean water crisis. Lest we believe that those in the more “developed” countries are immune to this “crisis,” scientists are projecting that we are currently in the beginning of a 50-year mega-drought in parts of the southwest United States (Ault, Cole, Overpeck, Pederson, & Meko, 2014). We have seen this beginning to play out in front of our eyes in California with the government issuing water restrictions on personal and urban use, among other measures of preventative usage, including offering rebates to replace old toilets. (For a more detailed account of all restrictions and ordinances, refer to California Environmental Protection Agency, 2016).

Water is certainly not the sexiest topic when one considers the “important” elements of sport, and particularly so-called “commercial” sports that have annual profits in the billions of dollars. However, without water, stadia and facilities would not be able to function. Clear indications of water usage can be witnessed by fans who might see a sprinkler head watering the outfield of a baseball stadium, but we are not as quick to see the estimated 630 gallons of water that it takes to make a hamburger a patron might consume (“Freshwater Crisis,” 2016) or the amount of water literally flushed out of the stadium in the bathrooms. This is not to say that the average fan should not enjoy a hamburger while watching her favorite team compete, but it is important to note the high usage of water by sport facilities when considering the connection between sport and the environment. Although it is something that most people do not ever consider, it is incredibly important to the long-term sustainability of facilities and communities. Therefore, the purpose of this chapter is to highlight some of the ways that water is used in sport facilities and stadia, some of the problems that arise in high water usage by facilities, and how we all can take steps to rectify this potential issue.

In order to accomplish this purpose and for simplicity sake, I focus primarily on the major professional sports in the United States with examples from the National Football League (NFL) and golf and the usage of water at the facility that is consumed by individuals. By this focus on consumption at the facility, I mean that I will not focus on how much water it takes to make a jersey, for example, but on the objects encountered at the stadium or facility. I begin by elucidating the connections between water and sport at a very basic level of usage, then discuss more in-depth

the problems associated with water usage, illuminate some solutions already in action through mini-case studies, and finalize by offering some solutions that sport organizations could consider.

The many connections between water and sport

The purpose of this section is to simply introduce an inventory for the many ways that water is utilized in the operating of a facility and the sporting event in the facility. In the next section, I will provide examples for what organizations do to temper water usage. For now, the task is to consider all of the various ways that water “acts” in the sports facility. The main points of interaction that will be considered here are the playing surface, periphery/aesthetics, bathrooms, and concessions/consumption.

The playing surface is potentially the easiest for the average individual to think about when considering interaction with water. It is the most visible element as the gaze is turned toward the action and stadia are designed to allow the athlete to participate on the best possible surface while providing fans with the most seamless views possible so they can focus on the game action. In an effort to make the playing surface best for participants, the fields are heavily watered. Water is essential for the playing surface. For example, Nick Hansen with RecycledH2O (2015) notes:

An NFL football field is 57,600 square feet (360' by 160'). This field size needs approximately 36,000 gallons of water, if one inch of water is to be applied to the entire field. (Extra grass along sidelines means more water used.) To put this into perspective, if your family of four uses 1400 gallons per week, 26 families would use the same volume of water that a football field will use for 1" of watering.

(para. 3)

Additionally, “[a] typical golf course requires 100,000 to 1,000,000 gallons . . . of water per week in summer to maintain healthy vegetation” (Alliance for Water Efficiency, 2016, para. 3). This is a large amount of water utilized by a multi-billion-dollar industry with roughly 16,000 golf courses in the United States and 34,011 worldwide utilizing a tremendous amount of water (Associated Press, 2015). There are many ways for monitoring how much water is used, and later I will discuss these in case studies from Denver and Pinehurst.

Stadiums and facilities also include aesthetic aspects such as foliage around a golf course and, very importantly, restrooms. Foliage clearly is different depending on the particular golf course, and I will discuss how to lower water usage in the later case study. Restrooms, however, are far more regulated and play a large role in how much water is used by a stadium or facility. Restroom regulations differ by city, state, and country, but generally consider ratios of number of people to number of toilets, anticipated number of attendees and expected gender of attendees, and what type of event is most commonly occurring at a stadium or facility (e.g., match, game, concert). For example, in their book on stadia design, John, Sheard, and Vickery (2007) provide the British codes for toilet regulation. If the venue predominately hosts concerts and women and men attendance is expected to be equal, then the general rule is that there is a 1:1 ratio of women to men’s facilities. In New York, so-called “potty parity” is measured by expected wait times. Architectural diversity scholar Kathryn Anthony discussed New York’s policies in adding toilets to ballparks and football stadiums by suggesting that there should be a 2:1 ratio in number of toilets available for women to men, because women take on average twice as long to use the restroom (Branch, 2009). These are designed with the product in mind, meaning that the less time people wait in lines for the bathroom, the greater the experience; thus, new stadia are adding more toilets resulting in the potential for more water to be utilized by people simply flushing

the toilet. At a golf course, it is estimated that each patron will account for between one and three flushes per visit (Alliance for Water Efficiency, 2016). According to ConserveH2O (2016), older toilets use between 3.5 and 7 gallons per flush, whereas new toilets can use as little as 1 gallon. As will be elucidated later, many new stadia are beginning to see the economic benefits of changing to efficient toilets.

Concessions are another area of the stadium that utilize a lot of water. From the production of food and drink to the cleaning of dishes and materials, water is critical to each element of the concession. The purchase and consumption of bottled water is perhaps most clearly a connection between the concession stand and water usage. The bottled water industry in the United States produces more than \$10 billion annually in sales revenue (International Bottled Water Association, 2013). In addition to bottled water and the aforementioned water utilized in the creation of a hamburger, golf courses often have bars and restaurants. The Alliance for Water Efficiency (2016) details a few ways that water is utilized by golf courses in food preparation:

Pre-rinse spray valves, often using as much as 4 gpm (15.1 lpm) are used to rinse dishes before they are loaded in the dishwasher; new, efficient spray valves use only 1.2 gpm (4.54 lpm) and can save hundreds of gallons per day depending on volume and type of meals served.

Ice machines are commonly found in food and bar service facilities. This equipment can use surprisingly large amounts of water. Depending on the model and the settings, ice machines use 2 to 18 pounds (.91 kg to 8.2 kg) of water for every pound of ice produced. Replacing water-cooled ice machines with air-cooled models can result in significant water savings.

(para. 15–16)

With these key interaction points in mind, I now turn to some contextual problems and how they are being addressed.

Recent cases of water management in sport As noted earlier, a lot of water goes into the operation of a stadium or facility. Often the contextual issues around the stadium can affect the operation of the stadium or facility. In the following, I detail some issues with droughts in San Francisco, infrastructure creation in Denver, and golf course management in Pinehurst and how those issues have been alleviated.

San Francisco and the California drought

When Levi's Stadium opened in 2014 as the new host site of the San Francisco 49ers, it was the first newly constructed NFL stadium to be certified LEED Gold (Greentrack, 2016). When it was constructed, Levi's Stadium was connected to the city of Santa Clara's recycled water system (London Community Resource Network, 2016). By connecting with the recycled water system, the stadium essentially made itself drought proof. In this way, the stadium does not reduce water supplies. Instead, 85 percent of the water used in the stadium is recycled water and used for irrigation, in the 27,000-square-foot green roof, and in the restrooms. This is a critical consideration given the massive water shortage facing California.

There are multiple interpretations of the word "drought" – it could refer to runoff, lower yearly precipitation, or a shortage of water utilized for particular purposes (California Department of Water Resources, 2015). Additionally, different factors can affect droughts – population shifts and agricultural patterns being historic culprits. In California's case, the California Department of Water Resources (2015) suggests that drought should be considered from a hydrologic

or average runoff perspective. This is primarily because the vastness of the state and the variance in topography make it so that drought can be isolated to particular areas.

The current drought has been quite extensive and garnered a large amount of media attention. News Deeply (2016) provides an extensive timeline for events surrounding the current drought beginning with low snowfall in 2007 and 2008. In other words, a drought does not just happen overnight. Instead, the state went from abnormally dry, to moderate drought, to extreme drought, to exceptional drought between 2011 and 2015. Further, for the current drought, the state has witnessed historically low statewide runoff, and agricultural hectares for almonds have doubled since 1993 (California Department of Water Resources, 2015). The confluence of events has led to a situation where, despite high snowfall and rainfall in 2016 thus far, “60 percent of the state remains in severe drought. Groundwater basins and many reservoirs are badly depleted as the state’s drought grinds into a fifth year” (Kostyrko, 2016, para. 2).

This context set up the necessity and opportunity for Levi’s Stadium to become a leader in environmental sustainability overall and water conservation, particularly. For the 49ers at Levi’s Stadium, the decision was to have 85 percent of overall water utilized come from recycled water from the Santa Clara Valley Water District. As the National Environmental Education Foundation (NEEF) (2016) defines it,

Recycled water is wastewater (water that goes down the drain in homes, businesses, and industrial settings) that the water authority treats with multiple methods to produce highly purified water. At Levi’s Stadium, this recycled water is used for playing field irrigation, watering the stadium’s green roof, refrigeration, cooling the stadium, and flushing toilets.

(para. 8)

Furthermore, the city of Santa Clara offers rebates to all residents and businesses for landscaping, commercial washing machines, and lower-cost recycled water (City of Santa Clara, 2016), meaning the 49ers saw an immediate economic advantage to utilizing recycled water. As a 2015 report in *Commercial Architecture* estimated

By eliminating the need to use fresh water to flush toilets and to irrigate the natural – grass field, planted roof, and other areas, the stadium makes use of readily available wastewater without tapping into freshwater supplies, which is of particular concern in drought-ridden California. According to stadium water-assessment estimates, *the system will save more than 42 million gal. of water/yr.*

(“Reclaimed Water System Scores Touchdown,” 2015, para. 5; emphasis added)

In the bathrooms specifically, the stadium has low-flow features for toilets, urinals, and sinks resulting in 40 percent less water usage than traditional counterparts (NEEF, 2016). This has a large impact on overall costs. Although having the stadium in Santa Clara is a larger environmental impact than not having a stadium at all, the organization has taken multiple steps to lessen the burden on natural resources in the Santa Clara Valley, while also conserving money in the long term.

Infrastructure for moisture sensors: Sports Authority Field at Mile High Stadium

Although Levi’s Stadium does have water sensors, one of the best fields in all of football belongs to the technologically advanced Sports Authority Field at Mile High Stadium in Denver. The

playing surface where the Denver Broncos play was named the “best field for professional American Football” and “best field for professional football” by the Sports Turf Managers Association. It was the first time that the same field won in two different categories (Desso Sports Systems, 2016). They are also the most forward thinking in terms of using soil-moisture sensors for the field. Head turf manager for the Broncos, Ross Kurcab, responded thusly when asked by a fan about the amount of water used by the team to take care of the field during the season:

About 2 million gallons of water, and a lot of effort. As you know, water is a very precious resource out west. We take this responsibility very seriously. We use soil-moisture sensors, and many other methods to determine exactly the turf irrigation needs. We have the latest, state-of-the-art computerized irrigation system, that I can access from home or anywhere to manipulate the programs. If rains come in after I leave work, I can shut down the irrigation from home. We always follow Denver watering restrictions, and try very hard to conserve water.

(Kurcab, 2005, para. 43)

As Kurcab pointed out, moisture sensors are very important in all cases, but particularly the western part of the United States, where droughts plague many regions (Ault et al., 2014) and water has been a key part of policy for centuries.

Indeed, water has always been in great demand in the western part of the United States. Despite the extremely harsh conditions and lack of water in the central part of the United States stretching from the Mississippi to the prairies of Texas, Oklahoma, Kansas, Nebraska, and Colorado, people found ways to master water (Solomon, 2010; Webb, 1981). In order to overcome shortages, initially, farmers would team together to build irrigation systems close to the river basins (Webb, 1981). Under this circumstance, the irrigation systems became similar to joint stock, entitling each member to a particular allotment of water. In this way the people of the region worked together to make sure each family was supported and able to live on their own crops (Webb, 1981). Unfortunately, this communal agreement did not last long, as the wealthy individuals figured out that they could not only buy the land, but also the water and then *maintain control* of said water. Thus, they began either to monopolize the water for their own personal use or to sell it to the farmers at a profit (Webb, 1981). Interestingly, land was mostly free to anyone wishing to settle through legislation such as the Homestead Act, but access to irrigated water became controlled by the wealthy individuals willing to profit off of the local farmers (Webb, 1981). In places such as Colorado, the first to divert the water owned the water (Glennon, 2009). A rule was adopted stipulating, “If there is not enough water for all farmers, this rule of ‘first in time, first in right’ can prevent more recent diverters from taking any water in order to protect the senior diverters” (Glennon, 2009, p. 88). This allowed large organizations such as Coors Brewing Company, large wealthy farms, and miners to effectively own the water. This established rule was maintained until technology allowed access to the large underground Ogallala Aquifer in the 1940s (Glennon, 2009).

The result of many of the laws that gave water away to the wealthy for nothing was that it encouraged economic speculation (Glennon, 2002). The maneuverings of water through various farms from different private owners resulted in a pay-to-use system that allowed a specific amount of water to be used by each paying customer. As Glennon (2002) noted, “Most importantly, allocating a specific quantity of water transformed water into a commodity, like gold or timber. The prior appropriation doctrine transformed water from a shared common resource into a private property” (p. 17). Essentially, any person who or company that could lay claim to the water was able to profit off of that control. This system of private ownership turning water

into a commodity is essential to understand in the current discourse of water. At the time, the commodification of water resulted in an overuse of water and certain individuals getting privileged over others – such was the case with the Hoover Dam. The dam was another testament to the United States' ability to be a world leader in the control of water and land (Solomon, 2010).

This mastery of water and attendant issues are still at play today. Slightly differently than what was discussed in California, Colorado's water shortage is attributed to population growth, at least according to Governor John Hickenlooper in 2013 (Steamboat Pilot, 2013). Zielinski (2010) painted a much broader picture for the water shortages in the west, including dams, irrigation, and climate change. Denver receives the majority of its water from runoff from snowmelt in the Rocky Mountains (Denver Water, 2016). As previously noted, trends in weather-related patterns can greatly affect how much water is available in a given region. Therefore, Mile High Stadium must closely monitor how much water is used.

In 2015, the Broncos completely renovated the field (Swanson, 2015). To maintain proper temperatures for the soil, the organization installed a new heating system. The idea of the heating system was to keep the soil from freezing when it normally would during the winter, which in turn keeps costs down (Kurcab, 2005). This also helps with the water usage. Furthermore, they invested in 56 new irrigation heads. Starting in 2008, the organization began utilizing a Toro Turf Guard wireless sensor system (Sportsfield Management Staff, 2009). This allowed for the remote tracking of moisture, salinity, and temperature. By tracking this, they can reduce irrigation and reliance on the heating system, track trends over time, and cut costs, all while being more environmentally friendly.

Golf course management: Pinehurst

Acknowledging that golf courses are mini-ecosystems, Audubon International created the Audubon Cooperative Sanctuary Program for Golf. This certification program is designed to “enhance the valuable natural areas and wildlife habitats that golf courses provide, improve efficiency, and minimize potentially harmful impacts of golf course operations” (Audubon International, n.d., p. 1). Understanding the ecological and economic impact of environmentally sustainable golf courses is crucial to a state and nation's economy. More money is spent on golf than any other sport in the world (Wheeler & Nauright, 2006). In 2011, the golf industry generated \$68.8 billion in goods and services (SRI International, 2012). SRI International (2012) estimates that the total economic impact of golf, when considering golf-enabled industry such as tourism for the purpose of playing golf, was \$176.8 billion in 2011. Although these numbers are impressive, this is actually a 9.4 percent decrease from the 2005 report. Additionally, the number of golf courses in the United States dropped from the 2005 report from 16,052 to 15,751. With the economic downturn in 2008, it is likely this number is even lower today.

The drop in profit and concern that the game was not being managed in a way that was healthy for the environment led to the formation of the environmental division of the Golf Course Superintendents Association of America (GCSAA), a partnership of golf course superintendents. The partnership has been able to provide a list of those courses that attempt to move toward environmentally sustainable practices. However, golf remains a business driven by economic interests from golf course developers, the hospitality and tourism sector, real estate investors, media, and merchandisers that demand return on investments determined by participation (SRI International, 2012). Thus, although the GCSA and the United States Golf Association (USGA) Green Sector are constantly evaluating ways to make the industry more sustainable, these sustainable decisions must also be shown to benefit or, at the very least, not negatively affect the bottom line.

Further, financial costs/savings and stewardship of local ecosystems are essential to environmental and economic sustainability efforts. These efforts can also have a direct relation on the branding and marketing of a golf course, an important factor for golf course operators. Simply, an operator is only going to make decisions that make financial sense, and creating innovative ways to market an environmentally sustainable course is critical to sustained financial success. By focusing on the natural habitat and health and well-being benefits, an environmentally sustainable course can create an identity that distinguishes and adds value to consumers while differentiating it from competitor courses. This will also ensure that the industry remains viable and is able to continue to add value to communities and businesses across the state.

The Environmental Institute of Golf noted, "Golf has suffered from the stigma of catering only to the elite and leaving a negative footprint on the environment" (Golf Course Superintendents Association of America, 2007, p. 6). The problem is that golf has seemed incompatible with the environment:

Golf is often the topic of considerable debate, perceived by many as a consumer of resources rather than being a significant contributor to the economy, ecology and society. Associated benefits include improved efficiency, reduced costs, enhanced image, more rounds booked, differentiation, growing the game, increased value and decreased environmental impact – a win for all – the game, the greens, community, planet and the bottom line.

(Experience Green, 2014)

To date, traditional courses have modified their landscape to meet expectations of long and lush green. As a result, many courses attempt to have luscious fairways and roughs by importing plants, heavily fertilizing, overseeding, watering heavily, and various other methods that increase operation and maintenance costs. Additionally, there is a perception among community members that golf courses are partially responsible to ecological damage and water overuse. As Mary Ann Dickinson, the chief executive of the Alliance for Water Efficiency, noted in Yun (2012): "The common reaction when the public is asked to cut back water is, 'Don't ask me to conserve when the golf course down the street is using so much'" (para. 14). Therefore, Pinehurst No. 2, an historic course in Pinehurst, North Carolina, undertook an \$11 million restoration (Peeler, 2014) in advance of its hosting of the 2014 Men's and Women's U.S. Opens.

When restoration plans for Pinehurst No. 2 were initially drafted, the sustainability aspect was not the primary focus (Farren, 2012). The restoration was intended to bring the course back to its illustrious and beautiful past. However, the changes became focused on the "three Ps," people, planet, and profits (Farren, 2012). The intention and result were simple: the course was returned to its natural state by reintroducing natural elements to the course. That is, instead of Bermuda grass in the roughs, the fairways were widened and the roughs were not traditional roughs anymore, but sandy areas complete with native vegetation (Farren, 2012). Most importantly for this chapter, "The irrigated area has been reduced from approximately 85 acres to 45 acres. The course once had over 1100 irrigation heads and now has only 450 with half of them covering the greens and tees" (Farren, 2012, p. 57).

Dr. Danesha Seth Carley, a researcher from North Carolina State University, provided in-depth research for the golf course changes. She was initially interested because of the ecological changes that an undertaking of this magnitude would clearly advance (Farren, 2012). As a leader in sustainability at NC State, Seth Carley noted:

Economic conditions, water shortages, and environmental awareness are leading to comprehensive changes in the golf course industry. Widespread efforts are being

directed at reducing resource inputs, and the costs associated with them, and merging golf courses with their immediate, natural environment.

(as cited in Farren, 2012, p. 57)

So, she monitored and studied these changes. As Peeler (2014) noted, Seth Carley and her students:

spent three years cataloging more than 80 native plants as they returned to the grounds of the historic course, filling in the gaps around the 200,000 sprigs of native wire grass hand planted by the restoration team in the natural areas. They identified what those plants looked like when emerging, when blooming and when dormant, and showed them to [Pinehurst's architects and officials], who picked and chose which plants they would like to thrive.

(para. 8)

These changes greatly altered the amount of water necessary to maintain the golf course. The hope was to show that a golf course could thrive when utilizing native vegetation. Through these changes to the golf course layout, Pinehurst No. 2 was able to be a leader in changing the way that water usage was defined in the golf industry.

Discussion

These three examples are only a semblance of some of the work that is taking place to ensure that stadia and other sports facilities help curb the growing water crisis. Admittedly selective toward professional football and golf, these examples provide a detailed description for how stadia and facilities could possibly monitor water. In Santa Clara, Levi's Stadium is a new facility that was built with sustainability in mind. That led them to utilize water monitors, efficient toilets and sinks, and maintain a partnership with the Santa Clara Valley to use 85 percent recycled water. At Mile High Stadium, the Broncos employed solutions to an already existing infrastructure. They were able to implement moisture sensors into their everyday practices and allow for lower costs and lower water usage. Finally, at Pinehurst, golf course management was able to revamp and restore the golf course to be more environmentally friendly and save water by reimagining the golf course. Although not all golf courses can undertake such a renovation, developing golf courses with native vegetation and monitoring the moisture in the fairways are essential for the environment and profits.

There are multiple ways that practitioners can implement changes to their stadia both within the examples noted here and in other areas. In partnership with the Natural Resources Defense Council (NRDC), the Green Sports Alliance (GSA) provides numerous examples of organizations, tennis tournaments, raceways, and golf courses that are utilizing innovative solutions to both save money and the environment. The GSA, in partnership with the U.S. Environmental Protection Agency, has designed a program called "WaterSense" and "WaterSense at Work" to help individuals and facilities better manage water. For sport facilities, WaterSense at Work recommends the following:

- 1 Continuously track water consumption and set goals to reduce.
- 2 Waterless/low-flow urinals and dual-flush toilets.
- 3 High-efficiency plumbing fixtures.

- 4 Aerators and motion sensors on faucets.
- 5 High-efficiency dishwashers and icemakers.
- 6 Timed irrigation systems and sensors to measure moisture level in playing fields.
- 7 Drought-resistant plants.
- 8 Landscaping to reduce storm water runoff.
- 9 Water-catchment systems to capture and reuse rain water and gray water.
- 10 Replacing grass with artificial turf playing fields.
- 11 Green roofs to reduce storm water runoff. (Green Sports Alliance, 2016)

As noted in the example of Levi's Stadium, the 49ers are leading the way in creating green infrastructure. "Green infrastructure – water quality management techniques like green roofs, tree planting, rain gardens, and permeable pavement – has been proven to help solve major urban stormwater problems and improve the health and livability of neighborhoods" (Clements, St. Juliana, Davis, & Levine, 2013, p. 4). The clearest example of new green infrastructure that has been implemented at Levi's Stadium and pushed recently by the NRDC is green rooftops. Green roofs allow for less energy usage in operating a facility in the summer, because the green roof provides a vegetative layer on the rooftop that provides shade and reduces the heat of the roof and the surrounding air (Roy, Quigley, & Raymond, 2014). Green roofs also help to control runoff and runoff pollution, which was identified as a major way that cities receive drinking water.

This can have huge costs savings for an organization as well. For example, in a report for the Center for Clean Air Policy, Foster, Lowe, and Winkelman (2011) found that "the life-cycle, net present value of green roofs has been estimated to be as much as 40% higher than a conventional roof from storm-water management, reduced electricity costs, and air-quality benefits" (p. IV). Blue roofs could be another way for organizations to move forward in protecting and containing valuable water resources. A blue roof can store rainwater, which helps after a rainstorm, because the water will not go into the sewer system. This is important as many cities have issues with CSOs (combined sewer overflow) after heavy rains (Roy et al., 2014). This is just another way that sport organizations can help their local ecosystem and environment while lowering costs and helping to control the growing water issues, particularly in the Western United States.

Conclusion

Overall, cities and sport organizations are becoming wiser in the way that water is used, captured, managed, and monitored. This is crucially important as the sport industry utilizes a lot of water daily. For example, in 2012, Gregory Lyman with the USGA released a report that the average golf course utilized about 2,312,701 acrefeet of water per year. Another study found that in total, U.S. golf courses use 2.08 billion gallons of water per day (Gammon, 2015). Further, in an investigative report spurred by concerned citizens of San Diego who wanted to understand how much water Petco Park, home of Major League Baseball's San Diego Padres, used, Melissa Mecija (2015) found, "For 100 Park Boulevard, the official address for Petco Park, the park used 704,616 gallons of water at a cost of more than \$7,800. That was from March 3rd to April 1st. That is nearly 24,000 gallons per day" (para. 9). For those who watch baseball, that is \$8,000 spent on water while the Padres are still at spring training. This shows the enormous amount of water consumed by stadia when the game is not being played; that is an issue to be resolved, and one that taxpayers, who own 70 percent of Petco Park, need to be very aware of.

The water usage issue in sport is one that is being addressed in many innovative ways. However, there is a long way to go as we fight through historic periods of climate change, weather patterns, increased agriculture, growing populations, and ever-larger stadia. The need for water to run the grand ballparks will not go away soon, and we need to ensure that water will be available. By investing in green infrastructure, stadia can lead the way in environmentally sustainable solutions while lowering costs for the organization.

References

- Alliance for Water Efficiency. (2016). *Golf course water efficiency introduction*. Retrieved from www.alliance-forwaterefficiency.org/golf_course.aspx
- Associated Press. (2015). *U.S. golf courses in steady decline*. Retrieved from http://espn.go.com/golf/story/_/id/12461331/number-us-golf-courses-steady-decline-says-report
- Audubon International (n.d.). *Fact sheet*. Retrieved from www.auduboninternational.org/resources/Documents/Fact%20Sheets/Golf%20and%20Environment/G_E%20-%20Golf%20and%20the%20Environment.pdf
- Ault, T., Cole, J., Pederson, G., & Meko, D. (2014). Assessing the risk of persistent drought using climate model simulations and paleoclimate data. *Journal of Climate*, 27, 7529–7549.
- Branch, J. (2009). New ballpark statistic: Stadium's toilet ratio. *New York Times*. Retrieved from www.nytimes.com/2009/04/13/sports/baseball/13potty.html
- California Department of Water Resources. (2015). *Drought in California*. Retrieved from www.water.ca.gov/waterconditions/docs/DWR_DroughtBroch_070815-web.pdf
- California Environmental Protection Agency. (2016). *Water conservation portal*. Retrieved from www.waterboards.ca.gov/water_issues/programs/conservation_portal/index.shtml
- City of Santa Clara. (2016). *Rebates*. Retrieved from <http://santaclaraca.gov/residents/rebates>
- Clements, J., St. Juliana, A., Davis, P., & Levine, L. (2013). *The green edge: How commercial property investment in green infrastructure creates value*. New York, NY: National Resources Defense Council.
- ConserveH2O. (2016). *Toilet*. Retrieved from www.conserveh2o.org/toilet-water-use
- Denver Water. (2016). *Water quality FAQs*. Retrieved from www.denverwater.org/WaterQuality/WaterQualityFAQs/
- Desso Sports Systems. (2016). *Denver Broncos, USA*. Retrieved from www.dessosports.com/sports/american-football/american-football-projects/denver-broncos-usa
- Experience Green. (2014). *Sustainability in golf – the business of green*. Retrieved from www.experiencegreen.org/golf/
- Farren, B. (2012). Uncovering the past to find our future. *USGA Turfgrass and Environmental Research Online*, 11(12), 56–57.
- Foster, J., Lowe, A., & Winkelman, S. (2011). *The value of green infrastructure for urban climate adaptation*. Retrieved from http://dev.cakex.org/sites/default/files/Green_Infrastructure_FINAL.pdf
- Freshwater crisis. (2016). *National Geographic*. Retrieved from <http://environment.nationalgeographic.com/environment/freshwater/freshwater-crisis/>
- Gammon, K. (2015, June 18). In face of drought, golf tries to reduce water use. *Inside Science*. Retrieved from www.insidescience.org/news/face-drought-golf-tries-reduce-water-use
- Glennon, R. (2002). *Water follies: Groundwater pumping and the fate of America's freshwater*. Washington, DC: Island Press.
- Glennon, R. (2009). *Unquenchable: America's water crisis and what to do about it*. Washington, DC: Island Press.
- Golf Course Superintendents Association of America. (2007). *Golf course environmental profile: Property profile and environmental stewardship of golf courses* (Vol. 1). Retrieved from www.eifg.org/wp-content/uploads/2012/07/golf-course-profile-property-report.pdf
- Green Sports Alliance. (2016). *Alliance resources*. Retrieved from <http://greensportsalliance.org/resource-center/>
- Greentrack. (2016). *Sport and Urban Policy Initiative*. Retrieved from www.stadiatrack.org

- International Bottled Water Association. (2013). *Economics*. Retrieved from www.bottledwater.org/economics
- John, G., Sheard, R., & Vickery, B. (2007). *Stadia: A design and development guide*. Boston: Architectural Press.
- Kostyrko, G. (2016). *State water board stresses need to continue water savings as drought persists*. Retrieved from <http://drought.ca.gov/topstory/top-story-61.html>
- Kurcab, R. (2005). *Ross Kurcab's answers*. Retrieved from www.denverbroncos.com/news-and-blogs/article-1/Ross-Kurcabs-Answers/f6b757b8-7892-11df-ba56-acc8e62813e9
- London Community Resource Network. (2016). *Levi's NFL stadium sets benchmark in water conservation*. Retrieved <http://lcrn.org.uk/levis-nfl-stadium-sets-benchmark-water-conservation/>
- Lyman, G. T. (2012). *How much water does golf use and where does it come from?* Retrieved from www.usga.org/content/dam/usga/pdf/Water%20Resource%20Center/how-much-water-does-golf-use.pdf
- Mecija, M. (2015). *Team 10: How much water is used at Petco Park?* Retrieved from www.10news.com/news/team-10-how-much-water-is-used-at-petco-park-051815
- National Environmental Education Foundation. (2016). *Super Bowl 50: Super efficiency at Levi's Stadium*. Retrieved from www.neefusa.org/weather-and-climate/weather/super-bowl-50-super-efficiency-levis-stadium
- News Deeply. (2016). *Timeline*. Retrieved from www.newsdeeply.com/water/background/timeline
- Nick. (2015). *Do you know which NFL stadium in California uses recycled water?* Retrieved from www.recycledh2o.net/2015/09/16/do-you-know-which-nfl-stadium-in-california-uses-recycled-water/#more-1399
- Peeler, T. (2014). *The doubleheader aftermath: Pinehurst No. 2 on the wild side*. Retrieved from <http://trianglegolf.com/index.php/2014/07/01/the-doubleheader-aftermath-pinehurst-no-2-on-the-wild-side/>
- Reclaimed water system scores touchdown. (2015, August 4). *Commercial Architecture*. Retrieved from www.commercialarchitecturemagazine.com/reclaimed-water-system-scores-touchdown/
- Roy, S., Quigley, M., & Raymond, C. (2014). From green to blue: Making roof systems sustainable in urban environments. *Roofing Magazine*. Retrieved from www.roofingmagazine.com/green-blue-making-roof-systems-sustainable-urban-environments/
- Solomon, S. (2010). *Water: The epic struggle for wealth, power, and civilization*. New York, NY: Harper.
- Sportsfield Management Staff. (2009). 10 questions – Ross Kurcab. *Sportsfield Management*. Retrieved from www.sportsfieldmanagementmagazine.com/maintenance/10-questions-ross-kurcab-2/
- SRI International. (2012). *The 2011 golf economy report: Executive summary*. Retrieved from www.golf2020.com/media/31624/2011_golf_econ_exec_sum_sri_final_12_17_12.pdf
- The Steamboat Pilot. (2013, August 22). Hickenlooper: "Colorado is facing a water crisis." *Denver Post*. Retrieved from www.denverpost.com/2013/08/22/hickenlooper-colorado-is-facing-a-water-crisis/
- Swanson, B. (2015). Sports Authority Field begins field renovation. *Denver Post*. Retrieved from www.denverbroncos.com/news-and-blogs/article-1/Sports-Authority-Field-begins-field-renovation/7ac97359-a364-49c4-8af7-a0faaf9f80b
- United Nations (2014). *Water scarcity*. Retrieved from www.un.org/waterforlifedecade/scarcity.shtml
- Webb, W. P. (1981). *The great plains*. Boston, MA: Ginn and Company.
- Wheeler, K., & Nauright, J. (2006). A global perspective on the environmental impact of golf. *Sport in Society*, 9, 427–443.
- Yun, H. (2012). *The campaign for sustainable water use*. Retrieved from www.usga.org/news/2012/November/Water-Summit-Campaign-for-Sustainable-Use/
- Zielinski, S. (2010, October). The Colorado River runs dry. *Smithsonian*. Retrieved from www.smithsonianmag.com/science-nature/the-colorado-river-runs-dry-61427169/

PHYSICAL ACTIVITY, SELF-ORGANIZED SPORT, AND SUSTAINABLE URBAN DEVELOPMENT

Karin Book

A sustainable city is not only a city where the air is clean, waste is recycled, motor traffic is reduced, and ecological questions are central to city planners, but it is also a city that creates opportunities for its citizens to live healthy lives. This consideration includes prioritizing planning for physical activity, a central focus in this chapter. In particular, in this chapter, I discuss how physical activity and sport in public spaces can serve as tools for making cities more sustainable, with a particular emphasis on Swedish cities.

In this chapter, I discuss how physical activity and sport in public spaces can serve as tools for making cities more sustainable. In Sweden and other Western countries, we have, on the one hand, changing conditions for and policies within urban planning, including increased focus on densification and infill strategies (see, for instance, Boyko & Cooper, 2013). On the other hand, we have the changing conditions for the sports movement or organized sport and how sport is carried out. This includes a decreased interest in organized sports activities and an increased interest in flexible, individual, and self-organized activities. A common feature of these activities is a need for other (urban) environments beyond traditional sports facilities, like sports grounds, sports halls, and other venues.

The sports context

In Sweden, we have a long tradition of a strong sports movement activating large parts of the population, especially children and adolescents, in organized sports activities. However, in the last decade, we have witnessed a decreasing interest in organized sport among larger groups and, partly as a consequence, physical activity patterns becoming more segregated. The activity rate in organized sport has decreased most among adolescents aged 15 to 20 and more among girls than boys (Norberg, 2012). Organized sport activities are being criticized for being too traditional, competitive, and bound to certain non-flexible facilities. Still, a large part of the (younger) population is active in sports clubs, using facilities all over the city, and, as a consequence, traveling long distances in their leisure time. However, a growing share of the urban population is not connected to the sports movement and has a much lower territorial range, and hence is more dependent on nearby, accessible activity opportunities in order to be physically active (Book, 2012). At the same time there is a general increase in interest for self-organized activities like

running, skateboarding, and parkour, which are dependent on public space. (For an international perspective on sport participation, see Hallmann & Petry, 2013; Nicholson, Hoye, & Houlihan, 2011.)

To meet the trends and needs of the urban population – especially those who do not engage in organized sports – and activate a larger part of the population, planning for open, nearby, and accessible spaces for physical activity could have a positive effect on sustainable active living among those with either large or limited territorial ranges.

If we widen the perspective, it is well known that there is a general problem with too little physical activity among the residents of all countries, including Sweden, despite being the most active country in the EU according to the Sport Eurobarometer 2013 (European Commission, 2014). According to the World Health Organization (WHO) in 2010, globally around 23 percent of adults aged 18 and over were not active enough (men 20 percent and women 27 percent). In high-income countries, 26 percent of men and 35 percent of women were insufficiently physically active, as compared to 12 percent of men and 24 percent of women in low-income countries. Lack of physical activity is partly due to sedentary behavior both on the job and during leisure time. An increase in the use of “passive” modes of transport also contributes to insufficient physical activity. Globally, 81 percent of adolescents aged 11 to 17 years were insufficiently physically active in 2010. Adolescent girls were less active than adolescent boys, with 84 percent versus 78 percent not meeting WHO recommendations (WHO, 2015). Although not the central purpose of the chapter, the need to improve physical activity levels represents an important underlying consideration, as discussed further next.

The urban context

In a lot of countries in the Western world, continuing urbanization, especially toward already densely populated and urbanized regions, is taking place. This is the case in Sweden, where the attraction of the larger urban regions is strong (National Board of Housing, Building and Planning, 2012). During the last decade, the compact city has gained global impact as a planning approach for sustainable development in areas with increasing urban population, as a counter-trend to the long-lived urban sprawl development. As Haaland and van den Bosch (2015) point out, the aim of densification, compact building, and infill strategies is to counteract negative effects of urban sprawl in terms of ineffective land-use and related environmental problems. Many researchers have shown that the 20th-century cities of sprawling developments are associated with social and environmental maladies. The preference for densification could be explained both as a planning policy shift with sustainability connotations and an answer to a series of demographic and economic changes (Stähle, 2010).

As Boyko and Cooper (2013) point out, urban densification has been a much-debated topic, with opponents suggesting that our cities will become cramped, noisy, and disease-ridden places as they become denser. Furthermore, as highlighted by Haaland and van den Bosch (2015), densification can lead to lower living quality in consolidation areas, with reduced recreation possibilities. Advocates of densification instead promote the sustainability benefits of living, working, and recreating in relatively close proximity to one another (e.g., greater access to green space, better public transportation choices, greater innovation) (Boyko & Cooper, 2013). Both sides have valid arguments and neither provide a perfect solution, as argued by Haaland and van den Bosch (2015):

In the light of rapid urbanisation and major environmental challenges, sustainable urban development is needed more than ever. The compact city concept addresses

some important aspects of this, but far from all. Other concepts should also be considered, especially in relation to urban green space. To green the compact city is possible to a certain degree, but requires careful planning and a sound knowledge base on how essential ecosystem services can be provided within the compact city's limited green space area. The creation of unsustainable city areas that lack green space is difficult to reverse. Therefore compaction must be done together with high-quality green space planning and implementation.

(p. 768)

Stähle (2010) has similar thoughts, starting from the structural inefficiency of post-war modernist suburbs with poorly integrated green areas. These areas could benefit from high-quality densification and restructuring as it could heal the areas and lead to greater green space accessibility.

Green spaces are undoubtedly one of the most important things for physical activity and well-being of the urban residents, including both humans and non-humans. However, not only are green spaces important to consider in the dense city, but also other types of high-quality public spaces. From a physical activity perspective, it is not clear whether dense environments are favorable or not. On the one hand, a high population density could generate a base for urban services, including sports facilities. Furthermore, in a dense environment, distances are usually shorter which could favor active transports. On the other hand, a number of studies show a negative relationship between urban density and engagement in physical activity (Forsyth, Oakes, Schmitz, & Hearst, 2007), except for utilitarian physical activity like walking for a purpose (see, for instance, Johnson-Lawson et al., 2015). However, it is likely that residents' levels of physical activity are determined not by city density as much as their perceptions of the quality of the physical and social environment (e.g., Blacksher & Lovasi, 2012). Thomson (2015) and Giles-Corti, Foster, Koohsari, Francis, and Hopper (2015) highlight the importance of neighborhood aesthetics, networks of local public open spaces, and convenience on the level of active recreation.

So, research indicates that high density alone does not enhance physical activity. Thus, as densification continues to be used as a sustainability and economic strategy, it is important to consider how physical activity could be prioritized and planned for in the dense urban environment. It is about creating opportunities and doing so in a compact way to fit into the dense city. Moreover, in a lot of cities high-density areas are associated with segregation, hostility, and poor urban environments, and hence there is a need for considering improvements in the urban environment.

Based on this sports and urban development background, the following questions are central:

- How could physical activity opportunities be created in the dense city?
- How could a growing preference for self-organized sport and physical activities be used for developing a living urban environment?

The following sections will not deal with densification as such or focus on low-status areas, but rather, on urban physical activity places, which could improve opportunities for and inspire activity among urban residents. A focus will be on public outdoor places for activity. This does not suggest that organized sport and indoor sports facilities are unimportant. Perhaps one could argue that the main aim should be to increase organized sports participation, as the sports movement has the potential for creating important societal values like cooperation, democratic knowledge, and pride. There is no contradiction between the perspectives highlighted in this chapter and developing organized sport. To create favorable opportunities in public space could

enhance the interest in sport and lower the barriers to enter organized sport, thereby increasing sports participation. There seems to be a correlation between participation in organized and self-organized sport. They give fuel to one another. However, from an urban sustainability perspective, outdoor activities in public space are worthy of primary focus. Therefore, in the next section, I discuss the ways in which Malmö, Sweden, has worked to address the needs for sustainable urban development, urban densification, and activity places outside organized sport.

Urban development and environmental sustainability in Malmö

Malmö is a city with about 300,000 residents in the south of Sweden. Malmö, just like other larger urban areas of Sweden, is growing fast due to immigration, and there is a great need for building new housing within the limited municipal area. Thus, Malmö is going through a densification process.

Within the population of Malmö there are fairly large health inequalities, according to Swedish standards. The difference in average life expectancy between men living in wealthier city districts and men living in less wealthy districts is six years. Similar disparities exist based on level of education (Commission for a Socially Sustainable Malmö, 2013). At the global level, the WHO has been working on “closing the gap” by identifying social determinants for health and actions in order to achieve health equity equal life expectancies (CSDH, 2008). In Malmö, the aim is to heal the city and reduce the large differences in wellness. One way of dealing with these issues has been to focus efforts on urban planning, an idea acknowledged by the Commission for a Socially Sustainable Malmö.

Active meeting places

The Malmö street department is responsible for developing and maintaining outdoor public spaces. During the last decade, the department has developed a high degree of consciousness regarding the importance of attractive and activating places. Among their projects are parks and urban green recreation areas, skate parks, outdoor gyms with different content, urban beach volleyball areas, climbing walls, and a wide selection of themed playgrounds complementing the more ordinary playgrounds. Several of these places, like the themed playground and the outdoor gyms, have a compact character and contain elements that could inspire to play and playful bodily movement. As noted by Mahdjoubi and Spencer (2015):

Play in outdoor environments can make a positive contribution to the well-being of all – from children to those in later life . . . Play can increase levels of fitness across age and social groups, improving and sustaining people’s quality of life and independence well into older age.

(p. 136)

With the importance of outdoor environments in mind, for several years, the street department worked to create a comprehensive strategy for physical activity in public space to function as a starting point and inspiration for urban planning and development. As part of the strategy, they worked with the leisure and planning departments to establish the “Programme for Active Meeting Places,” which was completed in 2015. The program creates a context, background, and platform for all those projects already carried out in Malmö and those still to come.

The aim of the program is to develop ideas and strategies for physical structures and places where the residents of Malmö can be physically active in public space. Underlying this central

aim is the promotion of public health, urban life, and democracy through active meeting places in the public urban space. This program emphasizes that public activity places are an important complement to sport facilities and activities organized by sport clubs. Additionally, the program reinforces the position that the people of Malmö should have equal opportunities to be active regardless of sex, age, physiological abilities, experience, economic situation, or place of residence.

The program points out the importance of developing active meeting places in order to decrease the differences in wellness among the population of Malmö and contribute to the overall quality of life in the city. Moreover, the efforts could be used in order to project Malmö as a young and active city. The vision is for Malmö to offer an inspiring environment with accessible, free, and diverse activity places, including both ordinary everyday places and more unique and advanced solutions that could gain international attention. Flexibility, creativity, and dialogue with potential users are mentioned as important aspects. Rethinking and courage are also important: “In order to profile Malmö as an active city, we need to have an open and curious approach to new and unproved ideas” (City of Malmö, 2015, p. 6).

Thinking outside the box and the pitch

During the last decade, a common strategy for activating adolescents in Sweden has been to build football pitches with artificial turf. However, they take up a lot of space, which is not compatible with densification. As an alternative, small-scale pitches have been built in large numbers. Both the full-scale and small-scale pitches are popular, but almost all users are young men already devoted to playing football either in clubs or in self-organized ways. Although these pitches serve a valuable purpose, they do not provide a comprehensive solution.

Organized sport usually builds on training and competition activities taking place in purpose-built, specialized facilities with certain measures, shapes, and lines based on guidelines for a certain sport. Sport is circumscribed by and embedded in regulations and rules, with the aim to make the participant stick to the rules and frames, thereby making achievements comparable. In fact, these regulations could support the performative and competitive logic of sport, which a lot of people find problematic with organized sport. The sheer sight of a traditional football pitch – that is, the perception of the environment in question (see Hall & Barrett, 2012) – might create hesitation in a person unaccustomed to or unfamiliar with the sport. What would happen to this logic if sport places and environments were built according to different principles? Further, what would happen if a football pitch was transformed into something else?

In response to these questions, in 2009, the city of Malmö built a small-scale “wavy football pitch,” as described by city officials and Johan Ferner Ström, the project designer:

The [wavy] football pitch is an interactive piece of art . . . The pitch is hilly with humps, the lines are curved and the goals irregular. A lot of people believe that life is a fair playing field, that the two halves of the field are equal in size and give us similar opportunities to score. But, in reality the ball rarely goes the wanted direction and the field is in fact uneven and full of holes.

(City of Malmö, 2009; Ström, 2015)

The creator of the hilly pitch (a project called *Puckelboll*, shown in Figures 28.1 and 28.2) – designed as an artistic interpretation of European football – wanted to neutralize players’ different abilities by the formation of the pitch. That is, the greatest football player might not be a puckerboll hero, as the many undulations and grades of the pitch made ball bounces



Figure 28.1 A Puckelboll pitch in Stockholm

Source: Image by David Puig Serinyà, Glósóli Ateljé Stockholm; interactive sculpture by Johan Ferner Ström, republished with permission



Figure 28.2 Detail of a Puckelboll pitch's undulations

Source: Image by David Puig Serinyà, Glósóli Ateljé Stockholm; interactive sculpture by Johan Ferner Ström, republished with permission

unpredictable. The pitch should be considered a complement to traditional pitches and stimulate new types of uses, games, and, perhaps most importantly, users. Whereas the barriers to entering a traditional football pitch surrounded by a fence might be very high (especially to those inexperienced in the sport), the wavy Puckelboll pitch doesn't have a fence and is more accessible both in physical and psychological terms. The size is smaller than an ordinary pitch, and is therefore less intimidating and easier to fit into a dense environment. This example highlights several important aspects of sustainable urban development with connection to physical activity, including playfulness, attracting new users, and accessibility to public space.

Participatory planning

In autumn 2013, the activity place *Rosens Röda Matta* was opened in Rosengård as part of the "Sustainable Rosengård" project. Rosengård is a residential area made up of citizens with mostly low socio-economic statuses, in a Swedish context referred to as a deprived area. The area has attracted a lot of both negative and positive attention. The positive attention consists of different development projects. For instance, several football projects have been launched, some in the form of activities and others in the form of infrastructure. The most famous project is probably the small-scale pitch in the residential court where Zlatan Ibrahimovic, a well-known Swedish footballer, grew up. In fact, the court is named "Zlatan Court" and was co-financed by the municipal social housing company, Nike, and Ibrahimovic himself.

As mentioned earlier, football pitches of different sizes are popular among residents, and the Zlatan Court has inspired much pride among those living in Rosengård. However, the users of the different pitches are mainly boys and men of a certain age who were already interested in playing ball games. Actually, most sport-related projects in Malmö have benefited boys, although this focus has been largely by design based on the understanding that physical inactivity was more common among boys than girls. With the development of *Rosens Röda Matta*, however, attention shifted to girls and young women (age 16 to 25).

Participation and dialogue became keywords during the development process. Girls were invited to a number of workshops. During the conceptualization phase, ideas and suggestions were fairly traditional and were largely based on existing sport spaces; with some input and inspiration to think in new ways, however, the girls become creative. To think outside the box is often necessary in order to develop new types of spaces and activities that appeal to individuals of varying activity levels while also conforming to a limited urban plot. Still, thinking outside the box is not always easy, as it requires one to step outside her familiar frame of references. Several ideas and activities for the activity center emerged from brainstorming sessions, many of which were realized (according to working material and an interview with a planner at the Environmental department in Malmö), including:

- the integration of physical, cultural; and social activities;
- a place for both girls and boys, but where girls have the priority and prerogative;
- music;
- dance areas with mirrors;
- a climbing wall;
- elements of water;
- creative lighting;
- soft and colorful paving;
- attractive furniture;

- a design that allows for a high degree of flexibility;
- a comprehensive plan to spread the message and market the center; and
- for the place to be accepted by adults.

As part of the planning process, some of the girls got summer jobs at the municipality and some were hired to arrange a test event at the site of the planned activity place. In 2012, the building of the place started based on many of the wishes stated by the girls. Once completed, the users, a voluntary club in the neighborhood, and the municipality have a shared responsibility for operating and maintaining the facility.

The Rosens Röda Matta facility highlights several important aspects of sustainable urban development with connection to physical activity: participation, gender issues, right to public spaces, the integration of different types of activities in one public place, and, just as the previous example, playfulness.

This example also underscores the importance of community involvement during urban planning. As noted by Blacksher and Lovasi (2012):

Speculation that health and social benefits will result from built environment improvements has assumed the connection to be invariant, rather than conditioned by the process of built environment change. Yet whether communities are consulted or included as partners in research to identify problems and efforts to design solutions may influence how they respond to structural and policy changes in their communities.

(p. 175)

Furthermore, the importance of involvement and communicative planning extends to planning for health and well-being (Barton, 2015).

Outdoor gyms

Outdoor gyms have become popular all over the world. It is easy to understand why. In Malmö, more than 10 outdoor gyms have opened in the past few years. They have very different characteristics and different types of locations in order to attract different groups. They are open for spontaneous use by everyone and have also become popular meeting places for sport clubs and other more or less organized groups. For example, the group *Träna i parken* (Training in the Park) organizes free and open outdoor training sessions through Facebook. At some of the gyms, the city or a sport club organizes open training sessions and has an instructor in place simply to help people with the equipment. Some people prefer to exercise in a completely self-organized form while others prefer to have some kind of help; in the latter case, the individual can feel safe and comfortable while participating in a relatively unorganized activity. The gyms therefore combine features from self-organized sport with organized club sport and sport activities offered by commercial gyms and fitness centers.

According to a survey carried out by the Swedish Sports Confederation (2011), the most popular exercise activities among Swedes (age 7 to 70) are walking, weight lifting, running, and working out. The outdoor gyms fit very well into the preferred training trends, and their open setting is fairly inclusive, although it is worth acknowledging that not everyone feels welcome and comfortable using the gyms. However, the varying supply and gym-for-free concept make them a realistic and attractive alternative for more people. According to the street department,

different gyms are “dominated” by different groups. Some attract a lot of women, some a lot of men; some young people and other older age groups.

The recent growth in outdoor gyms in Malmö exemplify several important aspects of sustainable urban development with connection to physical activity, including gender and age issues, accessibility, and connections between the organized and self-organized.

The importance of the urban environment

The importance of the environment has been recognized in ecological models of health behavior, especially related to physical activity. Ecological models (discussed, for instance, in different texts by James Sallis) consist of multiple levels of factors influencing individual behavior, including individual factors, the social environment, the physical environment, and macro-level environments. In other texts, the levels are referred to as intrapersonal (i.e., biological, psychological), interpersonal (i.e., social, cultural), organizational, community, physical environmental, and policy (Sallis et al., 2006). Ecological models of health behavior emphasize the environmental and policy contexts in which behaviors occur, while incorporating social and psychological influences. Ecological models provide comprehensive frameworks for understanding the multiple and interacting determinants of health behaviors (Sallis, Owen, & Fischer, 2008; Johnson-Lawrence et al., 2015). Individual interventions will not work well when environments are not supportive.

To use the built environment as a tool in order to improve opportunities for physical activity and active lifestyles is a promising intervention (Harris, Lecy, Hipp, Brownson, & Parra, 2013). Davis and Parkin (2015) note that since the new millennium, the supportive role of the built environment for human health has been acknowledged in interdisciplinary research, evidence-based policy development, and practice. A large part of the literature and projects concerning the effect of built environment on physical activity focus on active transport such as walking and biking, which is, of course, a very important theme in the motorized and sedentary society of today (see Forsyth, Oakes, Schmitz, & Hearst, 2007; Handy, Boarnet, Ewing, & Killingsworth, 2002; Harris, Lecy, Hipp, Brownson, & Parra, 2013; Humpel, Owen, & Leslie, 2002).

According to Humpel et al. (2002), environmental influences in relation to physical activity are often discussed in terms of barriers, facilitating conditions, and contextual influences. Proximity to outdoor recreation opportunities is a critical variable for explaining participation rates. Beginning in the 1960s, studies showed an inverse relationship between recreation participation and distance between a place of residence and recreation opportunities.

The aim of this chapter is not to apply ecological models, but rather to highlight some of the aspects of the physical environment, which is one of the important determinants of physical activity. As Johnson-Lawrence et al. (2015) point out: “Consistent with ecological models of health behaviour, a growing body of evidence indicates associations between both neighbourhood social characteristics and characteristics of the built environment with PA (physical activity)” (p. 510).

In connection to the discussion of insufficient physical activity levels (see earlier), the WHO has pointed out several environmental factors discouraging people from becoming active, such as fear of violence and crime in outdoor areas; high-density traffic; low air quality and high pollution; and lack of parks, sidewalks, and sports/recreation facilities.

Next, I argue that high quality concerning activating urban environments, like parks and sport/recreation environments, could improve the qualities in the other factors pointed out by WHO as well, through positive effects on social and environmental sustainability.

Physical activity as a driving force in sustainable urban development

In this chapter, I mainly use the term *physical activity* when discussing physical and sports activities in public space. Physical activity is an inclusive term, which could include light activities of sport and play as well as more vigorous sports activities. Other relevant terms to use could be “active living” and “sport.” Cavill, Kahlmeier, and Racioppi (2006) present the following definition in a WHO report:

Physical activity is any bodily movement produced by skeletal muscles that results in energy expenditure above resting level. This deliberately broad definition means that virtually all types of physical activity are of interest, including walking or cycling for transport, dance, traditional games and pastimes, gardening and housework as well as sport or deliberate exercise.

(pp. 2–3)

Sustainable development is a wide concept that can be described using different definitions and interpretations. When connecting sustainable urban development to physical activity in the city, one way of defining it could be by talking about “quality of life.” It is about enhancing the quality of life of urban residents – in doing so, the social, economic, and environmental sustainability outcomes for the community and the city will be positive (as pointed out in different ways and terms by Florida, 2005; Gehl, 1987; Jacobs, 1993).

As stated by Mahdjoubi and Spencer (2015), “A sustainable urban environment is one where the environmental quality of streets, parks and outdoor space both supports and encourages healthy lifestyles for all” (p. 136). Because physical activity could be a self-perpetuating phenomenon, these urban environments can have a desirable domino effect on citizens. When people activate in public space, they produce a demonstration effect leading to more people engaging. Filling urban space with people doing different activities is the key to a sustainable urban development. Relph (1976) argues that the modern urban world is characterized by inauthentic places and superficial relationships between people and place. Activating public places can fill an important role in overcoming these deficiencies in modern cities. In the following sections of this chapter, I present several examples of how attractive public places can activate residents and induce urban sustainability, often in the form of reciprocal relationships.

Attractive and activating public places ↔ physical activity ↔ use of the urban environment ↔ a sense of place and awareness about the urban environment → positive effects on environmental sustainability

For people to be physically active, they need to spend time in the places and hence, it is important to develop places where people want to spend time and feel relaxed and safe. These places should be interesting and exciting and contain physical features that can be used by different types of people in different ways at different times (Mahdjoubi & Spencer, 2015).

If citizens find urban spaces useful, they are more likely to take care of the urban environment. Similarly, if they are physically active, they are more likely to choose active transport modes as a strategy to be both healthy and conscious about the environment. Blacksher and Lovasi (2012) argue that this behavior can affect one’s perception of the environment, as activity patterns can enhance knowledge of environmental features relevant to physical activity because of accumulated experience with these features over time.

Attractive and activating public places ↔ physical activity ↔ use of the urban environment ↔ social engagement and a sense of belonging → positive effects on social sustainability

If urban planners develop an attractive environment that inspires residents to be outdoors, meet each other, and activate in other ways, social involvement and interaction will increase. Johnson-Lawrence et al. (2015) discuss the relationship between neighborhood involvement and physical activity, and they argue that social involvement is positively associated with physical activity. Mahdjoubi and Spencer (2015) note that access to and use of outdoor public spaces can increase social networks and help building social capital. Zang and Lawson (2009), as well as Madanipour (1996), explain that good public and semi-public spaces contribute to increased social activities and interactions, and Newman (1996) refers to surveys showing that well-defined public outdoor spaces can increase the sense of territory and connection among the people using them. People who feel connected to the place are less likely to move, which in turn brings social stability. Alternatively, high relocation rates could signal a lack of well-being and comfort.

Attractive and activating public places ↔ physical activity ↔ use of the urban environment ↔ increased territorial range ↔ mix and integration of different groups ↔ increased knowledge about “others” → increased feeling of security → positive effects on social sustainability

The supply and proximity of sporting and recreational opportunities in the neighborhood are highly relevant to those with a lower territorial range and those unable to drive, like low-income households, children, adolescents, and elderly people (Giles-Corti et al., 2015). Moreover, the sense and knowledge of space developed by activating in public spaces could increase the comfort zone and territorial range of residents. This could in turn bridge the gap between different areas.

Attractive and activating public places ↔ physical activity ↔ improved well-being and health → positive effects on social and economic sustainability (for the individual and society)

During the last decade, health-conscious planning has become more and more common, and the amount of cities working actively toward healthy urban planning has risen notably. There are a number of organizations working to increase the knowledge and inspire to initiatives. For example, since the mid-1980s, the WHO Healthy Cities Programme has been an important global force linking planning and health (Freestone & Wheeler, 2015). Furthermore, in the report *A Healthy City is an Active City: A Physical Planning Guide*, Edwards and Tsouros (2008) provided ideas, information, and tools for developing a comprehensive plan for creating a healthy, active city by enhancing physical activity in the urban environment.

Although the aim of this chapter is not to present a comprehensive toolbox for creating opportunities for physical activity in public space in order to contribute to a sustainable urban development, there is value in exploring examples of such urban design.

Quality of life

Since 2004, the European Commission has every third year conducted a survey regarding the perception of quality of life in selected medium-sized and large European cities. The latest

Eurobarometer survey – *Quality of Life in European Cities* – was published in January 2016. In total, perceived quality of life was investigated in 83 cities or urban regions, mainly within the EU but also in Turkey, Iceland, Norway, and Switzerland. Malmö was one of the cities included in the investigation. Altogether, 40,798 telephone interviews with respondents from different demographic and social groups were carried out in the 83 cities. Although acknowledging some limitations related to survey reliability, there are some interesting results to highlight from the physical activity angle.

To determine citizens' perceived quality of life, interviewers asked questions concerning the satisfaction with educational facilities, health care services, public transport, cultural facilities, housing situation, employment opportunities, integration issues, safety, environmental issues, and sport and recreation services. Sport and recreation aspects are captured through questions regarding sport facilities, public spaces, and green spaces. Malmö did well on satisfaction with public spaces such as squares, pedestrian areas, and playgrounds. In fact, the residents of Malmö were the second most satisfied of all. Malmö residents were the most satisfied with green spaces and parks. The least satisfied were Athenians, who were also among the least satisfied with the sport facilities. These results suggest that good public spaces are more important to residents' quality of life, and therefore, for sustainable urban development, as opposed to more spectacular sport developments like venues connected to hosting a mega-event such as the Summer Olympics.

Not only do attractive public activity places have positive social and environmental sustainability effects, but they also have positive effects from an economic sustainability perspective (e.g., through positive publicity and profiling). As discussed previously, aside from increasing health and contributing to positive city life, economic sustainability was one of the aims of Malmö's "Program for Active Meeting Places."

Future directions

Looking forward, it is worth highlighting three relevant directions for future research within the focused field of this chapter. I believe it is safe to say that developing attractive public spaces for physical activity has positive sustainable development effects not only for societies and cities, but also to individuals. Still, it remains unclear *to what extent* positive sustainable development affects individuals. More research is needed on the actual outcome of new public spaces for physical activity among different groups. In other words, who actually benefits and uses the places? There is a risk that the strategies implemented disproportionately benefit the already active and better-off, and thereby, reproduces the health disparities they were meant to ameliorate (Balcksher & Lovasi, 2012). Second, it is important to gain a deeper understanding of the needs and wishes among different segments within the population, such as generational differences. Third, in order to develop interesting and engaging activity spaces, planners must try new ways of combining activities (like the social and physical activities offered at Rosens Röda Matta). More research and evaluations are needed in order to understand how different activities can interact and fuel each other in public space.

References

- Barton, H. (2015). Planning for health and well-being: The time for action. In H. Barton, S. Thompson, S. Burgess, & M. Grant (Eds.), *The Routledge handbook of planning for health and well-being* (pp. 3–16). Abingdon/New York, NY: Routledge.
- Blacksher, E., & Lovasi, G. (2012). Place-focused physical activity research, human agency, and social justice in public health: Taking agency seriously in studies of the built environment. *Health & Place*, 18, 172–179.

- Book, K. (2012). *Rörelser i staden: En studie av ungas fysiska aktiviteter och geografiska rörlighet i tre områden i Malmö*. Stockholm: RF.
- Boyko, C. T., & Cooper, R. (2013). Density and decision-making: Findings from an online survey. *Sustainability*, 5, 4502–4522.
- Cavill, N., Kahlmeier, S., & Racioppi, F. (Eds.). (2006). *Physical activity and health in Europe: Evidence for action*. Copenhagen: WHO.
- City of Malmö. (2009). *Puckelboll*. Retrieved from <http://malmo.se/>
- City of Malmö. (2015). *Program för aktiva mötesplatser*. Retrieved from <http://malmo.se/>
- Commission for a Socially Sustainable Malmö. (2013). *Malmö's path towards a sustainable future. Health, welfare and justice*. Malmö: Holmbergs AB.
- CSDH. (2008). *Closing the gap in a generation: Health equity through action on the social determinants of health*. Geneva: WHO.
- Davis, A., & Parkin, J. (2015). Active travel: Its fall and rise. In H. Barton, S. Thompson, S. Burgess, & M. Grant (Eds.), *The Routledge handbook of planning for health and well-being* (pp. 108–120). New York, NY: Routledge.
- Edwards, P., & Tsouros, A. (2008). *A healthy city is an active city: A physical activity planning guide*. Copenhagen: WHO.
- European Commission. (2014). *Sport and physical activity report*. Retrieved from <http://ec.europa.eu/>
- Florida, R. (2005). *Cities and the creative class*. New York, NY: Routledge.
- Forsyth, A., Oakes, J. M., Schmitz, K. H., & Hearst, M. (2007). Does residential density increase walking and other physical activity? *Urban Studies*, 44, 679–697.
- Freestone, R., & Wheeler, A. (2015). Integrating health into town planning: A history. In H. Barton, S. Thompson, S. Burgess, & M. Grant (Eds.), *The Routledge handbook of planning for health and well-being* (pp. 17–36). New York, NY: Routledge.
- Gehl, J. (1987). *Life between buildings: Using public space*. New York, NY: Van Nostrand Reinhold Company.
- Giles-Corti, B., Foster, S., Koohsari, M. J., Francis, J., & Hooper, P. (2015). The influence of urban design and planning on physical activity. In H. Barton, S. Thompson, S. Burgess, & M. Grant (Eds.), *The Routledge handbook of planning for health and well-being* (pp. 121–135). New York, NY: Routledge.
- Haaland, C., & van den Bosch, C. K. (2015). Challenges and strategies for urban green-space planning in cities undergoing densification: A review. *Urban Forestry & Urban Greening*, 14, 760–771.
- Hall, T., & Barrett, H. (2012) *Urban geography*. Abingdon/New York, NY: Routledge.
- Hallmann, K., & Petry, K. (2013). *Comparative sport development: Systems, participation and public policy*. New York, NY: Springer.
- Handy, S. L., Boarnet, M. G., Ewing, R., & Killingsworth, R. E. (2002). How the built environment affects physical activity: Views from urban planning. *American Journal of Preventative Medicine*, 23(2S), 64–73.
- Harris, J. K., Lecy, J., Hipp, J. A., Brownson, R. C., & Parra, D. C. (2013). Mapping the development of research on physical activity and the built environment. *Preventive Medicine*, 57, 533–540.
- Humpel, N., Owen, N., & Leslie, E. (2002). Environmental factors associated with adults' participation in physical activity. A Review. *American Journal of Preventative Medicine*, 22, 188–199.
- Jacobs, J. (1993). *The death and life of great American cities*. New York, NY: Modern Library.
- Johnson-Lawrence, V., Schulz, A. J., Zenk, S. N., Israel, B. A., Wineman, J., Marans, R. W., & Rowe, Z. (2015). Joint associations of residential density and neighborhood involvement with physical activity among multiethnic sample of urban adults. *Health Education & Behavior*, 42, 510–517.
- Madanipour, A. (1996). *Design of urban space: An inquiry into a socio-spatial process*. Chichester: John Wiley & Sons.
- Mahdjoubi, L., & Spencer, B. (2015). Healthy play for all ages in public open space. In H. Barton, S. Thompson, S. Burgess, & M. Grant (Eds.), *The Routledge handbook of planning for health and well-being* (pp. 136–149). Abingdon/New York, NY: Routledge.
- National Board of Housing, Building and Planning. (2012). *En urbaniserad värld*. Retrieved from <http://sverige2025.boverket.se/en-urbaniserad-varld.html>
- Newman, O. (1996). *Creating defensible space*. Washington, DC: U.S. Department of Housing and Urban Development Office of Policy Development and Research.

- Nicholson, M., Hoye, R., & Houlihan, B. (2011). *Participation in sport: International policy perspectives*. New York, NY: Routledge.
- Norberg, J. (2012). Fler barn och ungdomar lämnar föreningsidrotten. *Svensk Idrottsforskning*, 2, 4–6.
- Relph, E. (1976). *Places and placelessness*. London: Pion.
- Sallis, J. F., Cervero, R. B., Ascher, W., Henderson, K. A., Kraft, M. K., & Kerr, J. (2006). An ecological approach to creating active living communities. *Annual Review of Public Health*, 27, 297–322.
- Sallis, J. F., Owen, N., & Fisher, E. B. (2008). Ecological models of health behavior. In K. Glanz, B. K. Rimer, & K. Viswanath (Eds.), *Health behavior and health education* (4th ed., pp. 465–486). San Francisco: John Wiley and Sons.
- Stähle, A. (2010). More green space in a denser city: Critical relations between user experience and urban form. *Urban Design International*, 15(1), 47–67.
- Ström, J. F. (2015). Puckelboll Sweden. Retrieved from <http://www.johanstrom.com/portfolio-item/puckelboll/>
- Swedish Sports Confederation. (2011). *Svenska folkets idrotts- och motionsvanor*. Stockholm: R.F.
- Thompson, S. (2015). Overview. In H. Barton, S. Thompson, S. Burgess, & M. Grant (Eds.), *The Routledge handbook of planning for health and well-being* (pp. 85–88). Abingdon/New York, NY: Routledge.
- WHO. (2015). *Physical activity: Fact sheet no. 385*. Retrieved from www.who.int/
- Zang, W., & Lawson, G. (2009). Meeting and greeting: Activities in public outdoor spaces outside high-density urban residential communities. *Urban Design International*, 14, 207–214.



Taylor & Francis

Taylor & Francis Group
<http://taylorandfrancis.com>

SECTION 6

Law and governance



Taylor & Francis

Taylor & Francis Group
<http://taylorandfrancis.com>

GOING GREEN

Environmental review, design, and operation of sports facilities

Alex Porteshawver

Professional sports teams have demonstrated that “going green” means more than generating profits. It means how teams build, operate, and manage their stadiums’ impacts on natural resources. By incorporating sustainable practices, they can help raise collective awareness of some of the most important issues of our time.¹ Over the past decade, stadium developers and teams have used their influence to showcase the need to incorporate sustainability into business (Henley, Hershkowitz, & Hoover, 2012). The real questions are have they done enough and what more can they do?

On the road to green: sustainability trends in sports

Sports teams have saved millions of dollars, gallons of water, and energy by going green. *Going green* means designing a new stadium or retrofitting an old facility to achieve reductions in greenhouse gas (GHG) emissions (Nunez & Pavley, 2006).² These reductions occur through energy, water, and waste management measures or by lowering transportation-related emissions by encouraging employees and spectators to use alternative means of transit (e.g., bike, walk) to get to and from the stadium. Many sports stadiums are already on the road to implementing these types of measures. According to the Natural Resources Defense Council, “15 professional North American stadiums or arenas have achieved LEED green building design certifications, 18 have installed onsite solar arrays, and virtually all have developed or are developing recycling and/or composting programs”³ (Henley, Hershkowitz, & Hoover, 2012, p. 8; U.S. Green Building Council, 2016). In addition, roughly 30 percent of professional sports teams in the United States have shifted to renewable energy to satisfy a portion of their energy demands, and nearly 54 percent have energy efficiency programs. These efforts are recognized. Millions of Americans attend sporting events (61 percent of Americans identify themselves as sports fans), providing a captive audience to promote the benefits of environmental stewardship (SustainableBusiness.com, 2012). In addition, the energy, water, chemical, auto, textile, plastics, and food industries are all suppliers or sponsors of professional sports teams, providing these industries the opportunity to promote the latest and greatest in green technology and practices (Henley et al., 2012). Environmental leaders like Allen Hershkowitz have brought resource conservation to the forefront of stadium operation and have demanded that big companies responsibly source their products and reduce their carbon footprint (Gordon, 2015).

Americans and sports fans alike have also become more aware of the impact of stadium construction in their cities. For example, the new San Francisco 49ers stadium – Levi’s Stadium, located in Santa Clara, California – is one of the greenest sports stadiums in all of the NFL (Niska, 2014). This distinction is due in part to the California Environmental Quality Act (CEQA), which requires review of environmental impacts and implementation of appropriate mitigation measures to reduce a project’s total GHG emissions below an acceptable threshold. However, it is also because of Santa Clara residents’ heightened awareness about environmental impacts associated with the stadium. For example, Santa Clara Play Fair, a community group that successfully opposed a 2010 ballot measure that would have paved the way for the new stadium, continually raised concerns about the impact on the community and the environment (Gonzales, 2016).

This chapter will examine the application of environmental law and regulation to sport stadium construction and operation. This chapter identifies gaps in California-required environmental review prior to stadium construction and discusses opportunities for cities to work with stadium and arena owners and operators to reduce the environmental impact of these facilities through implementing resource conservation policies and programs. Cities can encourage and even require that stadiums are built and operated to reduce GHG emissions by conserving energy and water and reducing waste and to reduce risk associated with projected sea level rise and increased temperatures.

Does environmental review lead to sustainable stadiums?

In 1970, the National Environmental Policy Act (NEPA) was signed into law, and it was groundbreaking. For the first time in U.S. history, the federal government was required to integrate environmental considerations into government decision-making (Environmental Law Institute, 2016). States were not required to follow suit, but some passed state environmental policy acts, or SEPA’s, into law. SEPA’s generally follow the NEPA model and require that agencies prepare an environmental impact statement (EIS) if “major actions” may or will have a significant impact on the environment (Montana Legislature, 2016). Some SEPA’s require only state actions are reviewed, while others also apply to local (city and county) actions (Montana Legislature, 2016). In states where local agencies are required to evaluate the environmental impact of major actions, sports stadiums are subject to environmental review. This review includes an analysis of the GHG emissions that will result from the proposed development. If those emissions are above air district-established emissions thresholds, the developer must identify and implement mitigation measures that reduce emissions below that threshold. If after implementing those actions, emissions levels are too high, some air districts allow developers to purchase carbon offsets. For example, the Monterey Bay Unified Air Pollution Control District allows developers to purchase carbon offsets as long as the offsets are consistent with the California Cap and Trade Offset protocol (San Benito County, 2015).

Depending on the proposed location of a new stadium, stadium developers may be required to go through additional review and permitting processes if the proposed project is near the coast. In the Bay Area, California, the project must not impede public access, must not fill the San Francisco Bay, and must protect natural resources and consider sea level rise. In California, the San Francisco Bay Conservation and Development Commission (BCDC) has authority over work undertaken within 100 feet of the shoreline unless such authority is specifically delegated to a local jurisdiction (BCDC, 2016). There are several types of permit applications, depending on the type, size, location, and impacts of a project (BCDC, 2016). In addition, because BCDC administers two California state laws, it issues different types of permits under

each law. In certain “emergency” situations, BCDC can issue any of these permits almost immediately (BCDC, 2016). Upon receiving a permit application, BCDC will review the proposed project and evaluate whether it is consistent with the McAteer-Petris Act (California state legislation) and any relevant special area plans reviewed and approved by BCDC. Special area plans are prepared in partnership with local governments and are considered amendments to the San Francisco Bay Plan (BCDC is required to develop this plan under the McAteer-Petris Act). The San Francisco Bay Plan and special area plans aim to protect and enhance habitat value, public access to the coast, maritime commercial activity, and open space while improving transportation and flood control (BCDC, 2016). BCDC must balance multiple interests and goals each time a new project is proposed, and sometimes, this balancing act is more difficult; for example, when the Golden State Warriors applied for the necessary permits to develop a new stadium. In the past, the environmental review and local permitting processes have not necessarily led to the most sustainable stadiums for a variety of reasons. These reasons are explained next.

Legal exemptions to stadium construction

Certain exemptions found in state environmental policy acts are directly applicable to stadium construction. CEQA guidelines state that a citizen-sponsored plan put to a vote of the people is not a “project” under CEQA and therefore does not require environmental review.⁴ Consequently, if a team is desperate to get the plans for its new stadium approved and to move forward with construction, it can essentially delay the need for environmental review as required under CEQA until after a referendum vote on the proposed stadium plan.

The San Francisco 49ers took advantage of this exemption by successfully obtaining the requisite number of signatures to place a stadium measure on the ballot, and Santa Clara citizens voted “yes.” Some citizens took action against the city, arguing that it needed to complete environmental review prior to placing the proposed stadium plan on the ballot. However, the California Superior Court ruled that a “non-binding agreement [the ballot measure] is not yet subject to environmental review” (Kukura, 2010; Mintz, 2010). The court has never established a bright-line rule indicating at what stage of the project environmental review is required. Instead, the court has held that environmental review “must be written late enough in the development process to contain meaningful information, but . . . must be written early enough so that whatever information is contained can practically serve as an input into the decision-making process.”⁵ Although a full environmental impact report (EIR) was prepared for Levi’s Stadium, it was completed after the voters approved its development through a ballot measure. It is difficult to determine whether the timing of environmental review ultimately affected the quality of the review, especially because the stadium is one of the greenest in professional sports. In addition, even though this exemption allowed the city (and the team) to delay environmental review, Santa Clara was still held to certain legal standards (described next) when it completed the environmental review process. Finally, this process included multiple public hearings where citizens expressed concerns over various environmental impacts. As the lead agency, the city was ultimately responsible for deciding the level of environmental review required, how best to address public input, and how to conduct a review process and reach a decision that would withstand any potential lawsuits.

The city was ultimately sued and the plaintiff alleged that the EIR was inadequate because it did not properly evaluate traffic-related impacts. After four years of negotiations, the plaintiffs reached a deal with the team and the city allowing developers to utilize certain parking lots for the new stadium, and dropped the lawsuit (Rosenberg, 2012). It is unclear if the lawsuit, ongoing

negotiations, or the use of designated parking lots greatly improved the perceived traffic congestion or had tangible air quality benefits, but the deal required the team to pay the plaintiffs a hefty sum for use of those lots (\$12.5 million) (Rosenberg, 2012).

This trend of exempting stadiums from environmental review has continued. In 2013, legislation was passed streamlining the CEQA review process for the new Sacramento Kings arena; the statute allowed certain activities to move forward while CEQA review was completed and narrowed the opportunity for legal challenges.⁶ Then, in August 2014, the California Supreme Court ruled that a qualified ballot initiative could be adopted outright by a city council without a popular vote and without complying with CEQA.⁷ In early 2015, two massive football stadium projects were approved by city councils in Inglewood and Carson, California, without the crucial studies, public analysis, and accountability mandated by CEQA (“Legislature, Close Loophole,” 2015). In both cases, developers pitched their projects as ballot initiatives, which are exempt from CEQA. They collected enough signatures to qualify for the ballot and then the city councils adopted the projects outright. This outcome means that both cities signed off on projects that could potentially “worsen traffic, pollute the environment and have other negative effects on the community with virtually no meaningful public input, study, or debate” (“Legislature, Close Loophole,” 2015, para. 5). The court acknowledged that its decision could allow developers to evade the CEQA review process.⁸

Legislative actions

In addition to the exemptions described earlier, certain projects may be exempted from environmental review by legislative action. State legislators have introduced bills that exempt a particular project or type of project from environmental review because of the project’s incidental benefits. For example, in an attempt to expedite the construction of wind farms, Montana passed a bill exempting wind developers from conducting environmental review under the SEPA if the wind farm is on non-state-owned land.⁹ More relevant to stadium construction is Assembly Bill (AB) 81. In October 2009, Majestic Realty Company convinced the California legislature and Governor Arnold Schwarzenegger that a new stadium built in the City of Industry would benefit the ailing economy in nearby Los Angeles (Adams, 2010). Acting pursuant to the California constitution, which allows the governor to call a special session after declaring a fiscal emergency,¹⁰ Governor Schwarzenegger signed California Assembly Bill 81 into law.¹¹ This bill officially exempted from CEQA “any activity or approval, necessary for or incidental to, the development, planning, design, site acquisition, subdivision, financing, leasing, construction, operation, or maintenance of [the proposed NFL stadium].”¹² The stadium was never built in the City of Industry, but if it had been, developers would only have had to comply with the city’s monitoring program created in response to the results of the original EIR. A monitoring or mitigation program typically contains GHG mitigation measures with which a developer must comply to reduce the total GHG emissions below an acceptable threshold (as described previously). The adequacy of the city-prepared EIR was also challenged – similar to what happened in Santa Clara. However, the lawsuit was “nullified” after the bill was signed into law (De Leon, 2009).

When Governor Schwarzenegger signed AB 81 into law, Californians were assured that it was a special circumstance and would not happen again. However, in September 2011, the state legislature passed another environmental exemption (Senate Bill [SB] 292) for the Anschutz Entertainment Group’s proposed NFL stadium, Farmers Field, in downtown Los Angeles (Hiltzik, 2011). The bill required the developer to complete a full environmental review of

the stadium, but any legal challenges would start at the state's court of appeal and have to be resolved within 175 days. That condition would erase the threat of protracted lawsuits derailing the project. In exchange, the developers would make the stadium carbon neutral and take steps to reduce traffic (McGreevy & Williams, 2011). Supporters of the bill touted that the legislation would guarantee thousands of jobs and a boost in the local economy, but those sentiments were met with opposition from environmentalists concerned about the environmental impacts to the local community, including residents living near the proposed new stadium. The stadium was never built (Bonsignore, 2015),¹³ but SB 292 was easily passed (32–37) by the Senate. Theoretically, the bill could have resulted in a stadium that went above and beyond what CEQA required, but there is no way to know for sure.

California legislators seem to be willing to circumvent CEQA, indicating that it needs broad reform and that piecemeal legislation that achieves the same or better results might help frame the law's overhaul. The sort of narrow legislation discussed above has introduced a template not only for stadiums but for other types of development as well, and it will be interesting to see where this approach leads prior to CEQA reform (Kulkarni & Cremin, 2015).

Permitting decisions

In addition to completing environmental review required under state environmental policy acts, developers must obtain various permits prior to starting construction. Local regulatory agencies may share approval authority with a city or county and impose additional requirements on a developer prior to a project receiving approval. In the case of the Golden State Warriors' new arena, the developers must obtain the San Francisco Planning Commission's approval and apply for permits and approval from the State Lands Commission (SLC) and BCDC. The Golden State Warriors have proposed to build a new stadium on the Embarcadero in San Francisco (Brekke, 2015).¹⁴ In order to obtain a BCDC permit, the project, which includes a \$500 million, 17,000– to 19,000-seat arena and various retail and waterfront access improvements (Matier & Ross, 2013), must comply with several special conditions. Failure to comply with the permit conditions can invalidate any issued permits and lead to fines and legal action against the permittee.¹⁵ In addition, the SLC must determine that the stadium is consistent with the Public Trust Doctrine (the "Doctrine").

State Lands Commission

The SLC (2015) holds certain tidal and subtidal lands in trust for the public, ensuring the lands are used for the benefit and enjoyment of the public. It also grants certain lands to local jurisdictions to be used consistent with the Doctrine.¹⁶ There are some exceptions to the Doctrine. Existing law declares that specified lands along the San Francisco waterfront can be used for commerce, navigation, and fisheries, including cruise ship terminal development, other maritime facilities, and commercial and office space on a specified area of the waterfront.¹⁷

The SLC typically reviews a project proposed on trust lands and determines if the new project is consistent with the Doctrine and meets any additional terms and conditions applicable to the area. Some opponents of the Warriors' project argue that public trust resources, such as the tidelands site where the new stadium would be constructed, should be limited to "water-dependent uses" or those that happen on or adjacent to tide and submerged lands (Frank, 2013). "A sports arena, they point out, can be built anywhere and is clearly not water-dependent" (Frank, 2013, para. 5).

BCDC

BCDC typically imposes permit conditions that require applicants to construct, guarantee, and maintain public access to the San Francisco Bay. Per the McAteer-Petris Act, the San Francisco Bay Plan, and the Special Area Plan, BCDC may approve the stadium project only if the commission finds that it provides the maximum feasible public access to the bay consistent with the project.¹⁸ BCDC must impose conditions that ensure that the design and placement of the stadium maximizes public access to the bay.

Circumventing regulatory authority: Assembly Bill 1273

AB 1273, signed into law in 2013, authorized the SLC to approve a mixed-use development on the San Francisco waterfront at Piers 30 to 32, which would include a multipurpose venue for events and public assembly (this includes the Warriors' arena), if the SLC finds, at a properly noticed public meeting, that specified conditions are met (outlined below). In addition, the bill authorized the SLC to convey to the city and county of San Francisco all of the rights, title, and interest held by the state in trust to specified lands along the waterfront, but would prescribe terms and conditions for the use of those lands in connection with a multipurpose venue, as described.

The legislature found that “unique circumstances” exist at Piers 30 to 32 on the San Francisco waterfront and therefore, the law sets no precedent for any other location or project in the state.¹⁹ Instead of allowing the SLC or BCDC to make the typical findings when reviewing a permit application or project, the law made the following relevant findings about the proposed development including the Warriors' arena:

- 1 The project will further public use, access, and enjoyment of the tidelands and surrounding water at this location by providing a multipurpose venue for events and public assembly, coupled with public access, open space, and venue supporting or trust retail uses;
- 2 The project is ideally situated to provide public access to and enjoyment of the waterfront and bay; and
- 3 The inclusion of significant public access improvements, maritime facilities, and venue supporting or trust retail uses, together with a new multipurpose venue for events that bring people from around the state to the waterfront to use and enjoy the public trust assets of San Francisco, enhances and promotes trust purposes.²⁰

The legislature exercised its “retained power as trustee of the public trust” and in view of the unique circumstances existing around the project, authorized the SLC to approve the project provided certain conditions were met, which include preserving the view of the Bay Bridge and the bay, minimizing interference with public access, and hosting public-trust consistent events.²¹ The law reserved some decision-making authority for BCDC, stating that in a separate permit process it should determine whether the project achieves and enhances maximum feasible public access to and minimum fill in the bay in a manner consistent with the Special Area Plan, the McAteer-Petris Act, and the Bay Plan.²²

Despite the SLC and BCDC's clear regulatory authority to evaluate the project and determine if it is consistent with the Doctrine and existing law, the legislature stepped in again and expedited review of the project, citing similar ancillary benefits as were cited in prior laws and court rulings exempting stadium construction from environmental review. Considering these exemptions and the unique circumstances that tend to surround stadium development, other

existing laws, regulations, and programs may address environmental impacts of stadium construction and operation more effectively.

California: state leadership that gets us closer to “green”

California has long been a leader in addressing how human activity, including new development, affects the environment. This section explains major initiatives undertaken by the state and how they have trickled down to the local level, either requiring or empowering local governments to take action to reduce the environmental footprint of activities occurring within their boundaries. These laws are specifically applicable to stadium construction and operation since local governments (along with the regulatory agencies described earlier) can encourage and even require private developers and businesses to consider the environment during the design phase and post-construction.

California law first addressed climate change in 1988, when AB 4420 directed the state to prepare a GHG inventory and study the impacts of climate change. Since then, California has adopted several laws to assess climate change, analyze and reduce GHG emissions and their effects, and prepare for the impacts of climate change. Many of these laws and associated regulations affect cities and proposed development in those jurisdictions.

Executive Order S-03-05

In 2005, Governor Schwarzenegger signed Executive Order (EO) S-3-05, declaring that California is vulnerable to the impacts of climate change through reductions in the Sierra Nevada snowpack (a major source of water for the state), reduced air quality, and rising sea levels. EO S-3-05 also sets the following GHG reduction goals for the state: reduce emissions to 2000 levels by 2010, reduce emissions to 1990 levels by 2020, and reduce emissions 80 percent below 1990 levels by 2050.

The California Global Warming Solutions Act of 2006

The California Global Warming Solutions Act of 2006, also known as AB 32, codifies the goals set in EO S-3-05 and sets a target for the state to reduce its total GHG emissions to 1990 levels by 2020 through a series of market-based and regulatory mechanisms. These mechanisms are discussed in the AB 32 Scoping Plan, developed by the California Air Resources Board (CARB). Actions in the Scoping Plan include producing 33 percent of the state’s electricity from renewable sources by 2020, implementing clean car standards, and developing a cap-and-trade program for major stationary sources of GHGs. The Scoping Plan identifies local governments as strategic partners to achieve the statewide reduction goal and establishes a GHG emissions reduction of 15 percent below existing levels (generally interpreted as emission levels between 2005 and 2008) as being comparable to a return to 1990 levels.

California Renewables Portfolio Standard

One of the most ambitious renewable energy standards in the country, the Renewables Portfolio Standard (RPS) mandates that 33 percent of electricity delivered by investor-owned utilities in California be generated by renewable sources like solar, wind, and geothermal by 2020.

Title 24, energy efficiency standards

Title 24 of the California Code of Regulations is a statewide standard applied by local agencies through building permits. It includes requirements for the structural, plumbing, electrical, and mechanical systems of buildings and for fire and life safety, energy conservation, green design, and accessibility in and around buildings. Part 6 (the California Energy Code) and Part 11 (the California Green Building Standards Code) include prescriptive and performance-based standards to reduce electricity and natural gas use in every new building constructed in California.

SB 375 – Sustainable Communities and Climate Protection Act of 2008

SB 375 helps the state meet the emission reduction goals set in AB 32 by promoting regional planning and quantifying the environmental and health benefits associated with reduction in vehicle miles traveled (VMT) and increasing the share of pedestrian and bike trips, as well as public transit use. The legislation requires CARB to develop regional GHG emissions reduction targets by reducing the number and length of passenger trips. Then, each of the 18 metropolitan planning organizations must prepare a sustainable community strategy (SCS) that demonstrates how each region will meet its GHG reduction target through integrated land use, housing, and transportation planning. CARB then reviews each SCS to determine whether, if implemented, the plan would achieve GHG emissions reduction targets for the region. This plan sets a regional policy framework that helps cities develop local strategies to reduce emissions.

Safeguarding California

In April 2015, Governor Jerry Brown signed Executive Order B-30-15, which established a California GHG reduction target of 40% below 1990 levels by 2030 (increasing the existing goal). The order addressed the need for climate adaptation and directed the state government to incorporate climate change impacts into the state's Five-Year Infrastructure Plan; update the Safeguarding California Plan – the state's climate adaptation strategy – to identify how climate change will affect California infrastructure and industry and what actions the state can take to reduce the risks posed by climate change; and factor climate change into state agencies' planning and investment decisions.

These are only a sample of the various laws and related regulations that are driving California toward a more sustainable future. Similar laws exist in other states. These laws have driven local governments to follow suit either because they are required to do so or because state law encourages them to do so by providing benefits. For example, qualified climate action plans, described in further detail later, can be used to streamline environmental review of new projects, provided the local jurisdiction regularly monitors plan implementation.

Cities lead the way

Cities around the United States have taken local action to reduce GHG emissions by developing more efficient buildings, reducing reliance on gasoline-powered vehicles, and increasing the amount of renewable energy generated within their jurisdictions. Climate action plans (CAPs) are the basis for many of these actions. CAPs are developed on the premise that local governments and the communities they represent are uniquely capable of addressing many of the major

sources of GHG emissions within their jurisdictions that contribute to climate change (Benicia, 2009). The purpose of a CAP is to provide objectives and strategies that guide the development and implementation of actions that reduce GHG emissions (Benicia, 2009).

Unlike the environmental review required by state environmental policy acts or the review of permit applications to ensure the public trust and public access is preserved, CAPs are not required under state law. Cities are not required to implement them, and many of the strategies in these plans are voluntary rather than mandatory. That being said, some cities have been extremely successful at implementing their CAPs and have adopted related ordinances that make certain actions mandatory in their communities. Cities have also adopted programs that make it easier for individuals and businesses to be greener. These can be excellent tools to reduce GHG emissions and address some of the issues that may not be properly or entirely addressed through the environmental review or permitting processes described previously.

Energy conservation ordinances

Residential and commercial energy conservation ordinances, commonly referred to as RECO and CECO, require residential and commercial property owners to track and report energy use. Some ordinances require this disclosure on an annual basis, whereas others require it at a “time certain” – for example, when the property is sold or starting on a particular date. Some cities adopted these types of ordinances in the late 1980s, well ahead of the curve (Berkeley, 2016b),²³ and some cities may never adopt these types of ordinances and instead wait for the state to mandate energy tracking and reporting.²⁴ These ordinances are particularly relevant for existing construction, because new construction must be built to meet Title 24 energy efficiency standards (referenced earlier). The ordinances do not typically mandate a specific type of energy efficiency upgrade or even require a percentage reduction for energy use. The idea is that by tracking and reporting energy use, the market perceives those buildings as having a higher value because efficiency upgrades save owners and tenants money on their utility bills and incorporate new technologies replacing outdated equipment. In other words, the goal is to increase demand for more efficient structures by showing potential buyers and lessees the added value of owning or leasing a more efficient building.

The city of Berkeley, California, recently updated its energy savings ordinances, which apply to commercial and residential buildings. The ordinances were updated with significant community input from property owners, real estate agents, the University of California, Berkeley, and other stakeholders. These ordinances apply to all buildings; specifically, for large buildings of 50,000 square feet or more (the category sports stadiums would fall in), beginning October 1, 2016, these buildings must complete an energy assessment every five years and an Energy Star Performance Report annually (Berkeley, 2016a). The California Memorial Stadium, now called Kabam Field, where the Cal Bears football team plays its home games, was renovated from 2010 to 2012 with a total cost of \$321 million (California Golden Bears, 2016). Although this renovation was likely considered “major” in that certain provisions of Title 24 applied – for example, new lighting installed at the stadium had to meet certain efficiency standards – the university will still have to comply with the city’s new ordinance. This requirement means that they will have to publicly report how much energy the stadium uses on an annual basis and complete an energy assessment every five years.

Will this reporting result in a greener stadium? Probably. The university is arguably concerned about its environmental image considering that it is located in the Berkeley Hills, one of the more progressive and environmentally conscious areas of the country. It must answer to

a large number of donors who helped fund the stadium renovations, boosters or donors that continue to support the football team, and the public who pays to watch the team and use the facility. The university took on a large debt to pay for the costs of stadium renovations. It seems that environmental stewardship, including the efficient use of resources like energy, would be important to the university's image and to maintaining public support for the stadium. Arguably, the required public reporting of the stadium's energy use and trends will result in more attention and potentially more effort to reduce energy use as a public commitment to the environment.

Community choice energy

Community choice energy (CCE) programs allow local governments and some special districts to pool (or aggregate) their electricity load in order to purchase or develop power on behalf of their residents, businesses, and municipal accounts (Lean Energy US, 2016b). They work in partnership with utility companies who continue to maintain the electricity distribution and transmission systems, bill customers for energy use, and provide customer service while the CCE program procures electricity for its customers. In California, if CCEs exist, they are considered the default electricity provider, and customers must opt out if they wish to stay with the investor-owned utility.²⁵ There are three existing CCE programs in California and many more that are currently being planned or will soon be launched. There are also many CCE programs across the United States (Lean Energy US, 2016a). CCE programs typically procure a higher percentage of renewable power than their investor-owned utility counterparts. For example, Marin Clean Energy (MCE), a CCE program launched in 2010 in Marin County, California, offers its customers 57 percent and 100 percent renewable energy content, depending on the level customers select.²⁶ In contrast, Pacific Gas and Electric Company (PG&E), arguably the most progressive private utility in the United States, which offers only 27 percent renewable energy. All CCE programs attempt to offer a higher percentage of renewable power at competitive prices compared to rates offered by investor-owned utilities providing less renewable power. CCE programs also allow more local control when designing energy efficiency programs and setting rates. Typically, CCEs are governed by a board that is made up of representatives from each jurisdiction that has joined the program.

As mentioned earlier, because CCE programs in California are opt-out programs and because they offer a higher percentage of renewable power than private utility companies, implementing a CCE can be the single biggest GHG reduction measure a local government can implement. These programs can be especially effective at reducing energy-related emissions from commercial facilities, including sports stadiums that have large energy loads even after efficiency measures have been implemented. If a CCE program is implemented, large amounts of electricity would be supplied by a higher percentage of renewable energy, significantly reducing GHG emissions and resulting in cost savings for facility owners and operators. The City and County of San Francisco is nearing launch of its CCE program and both AT&T Park and the new Warriors' arena would automatically be enrolled in the program unless they opt out.

The next level

Sports stadium construction and operation provides many exciting opportunities to implement sustainability measures and inspire change in society in general. As mentioned earlier, millions of sports fans regularly attend games and frequent stadiums for a variety of events. As a result, stadium developers and operators have an excellent opportunity to raise the level of consciousness around some of the most important issues of our time. Stadiums are already taking steps to

green their operations and reduce their environmental footprint, but they can do more. Below are some ideas for taking these efforts to the next level.

Reduce transportation-related GHG emissions

Transportation-related GHG emissions often make up the largest or second largest percentage of emissions in cities. Emissions reduction can be achieved by developing new buildings near existing public transit and encouraging individuals to bike, walk, carpool, or drive cleaner-fuel vehicles. Sporting events draw fans who oftentimes drive to and from games and other stadium events, contributing to local GHG emissions. Stadiums are in a unique position to encourage the use of alternative means of transit by raising parking costs or providing incentives for visitors to use public transit. Operators can also install electric vehicle charging stations. Although the installation of these stations will not reduce GHG emissions, it may encourage visitors to drive electric or plug-in hybrid vehicles to events because they know the vehicles can be charged while they are enjoying a game or concert.

Prepare for climate change impacts

Some states and cities have begun to assess climate change impacts and risks and develop strategies to help reduce those risks. Impacts may include increased flooding, warmer temperatures, and sea level rise. For example, the new Golden State Warriors' arena will be built in an area where it is all but certain that sea level rise will result in continued flooding by 2050 (San Francisco, 2016). When evaluating the potential environmental impacts of building the stadium, various reports downplayed this threat, indicating there was a lack of regulatory clarity (Stark, Bird, & Stoll, 2015). Although it remains to be seen, the Warriors' arena developers have a unique opportunity to raise awareness of climate change impacts, identify solutions to those impacts, and set an example for other private developers along the San Francisco Bay and in other parts of the United States susceptible to sea level rise.

The stadium developers would not be the first private entity to reflect on these certain impacts and identify solutions that can help stadium operators adapt to change. For example, CDP, a nonprofit organization that offers the only global system for the disclosure of environmental information, asks cities and companies to report sustainability efforts including response to climate change impacts. CDP has worked with thousands of companies (81 percent of the global Fortune 500 companies report already) to raise awareness of how climate change will affect company operations, identify synergies between companies and cities and how each can help one another adapt to climate change, share solutions for mitigating risks, and develop strategies to motivate other private companies and cities to make strategic changes to how they do business (CDP, 2016). This public reporting should be tapped into by stadium owners to identify ways they can reduce climate change-related risks to their supply chain, mitigate climate change impacts to their facilities, and continue to reduce GHG emissions. These actions not only will increase the capacity of these large stadiums to adapt to a changing climate, but will likely result in cost savings and additional support from the public.

Partner with cities to effect change

As mentioned many times in this chapter, stadiums and cities have a unique relationship. Stadiums provide entertainment and economic development opportunities to cities, and cities are in a place to regulate and encourage those stadiums to be built, renovated, and operated with the

environment in mind. Stadiums have been the center of attention both because of exemption from environmental review and because of progressive efforts undertaken to be green. Although stadium development and operation can present many challenges, they also present many opportunities. Teams have partnered with cities and companies from stadium design through operation to promote green practices and should continue to do so. For example, the San Jose Quakes and the City of San Jose partner to promote the city's oil recycling program at home games. The San Francisco Giants partner with PG&E to promote energy efficiency programs, which help the city and county of San Francisco meet its GHG reduction goals through the reduction of energy use. Stadium owners can and should do more, just like other large commercial or industrial entities have done; for example, oil refineries have created special funds to be used for city climate programs.²⁷ Stadiums should consider allocating funding to the cities where they are located for energy efficiency, renewable energy, and other conservation programs.

Conclusion

Professional sports are America's pastime. Millions of people attend sports events each year to cheer on their favorite athletes and root for their favorite teams. The stadiums and arenas that hold these fans are large facilities that consume a large amount of resources. In the face of a changing climate caused by human activities and consumption of these resources, sports arenas must be built and operated to reduce their environmental impact and display responsible ecological behavior. In theory, environmental review of arena and stadium plans prior to construction should identify and require that facilities "go green," but oftentimes stadiums are exempt from meaningful review because of legislative action. Even if this happens, there is still a unique opportunity to operate these facilities in a way that reduces energy, water, and waste and generates on-site renewable power, while increasing the resilience of these stadiums to future climate change-related impacts from sea level rise and increased temperature. Stadiums and arena owners and operators may not make resource conservation a priority on their own – cities may need to partner with them to effect change. Through local climate action and sustainability planning, cities and stadium owners and operators can support one another as they increase the efficiency of operations and conserve precious resources while preparing the facility to withstand climate change impacts.

Notes

- 1 Science tells us that the Earth is changing and that human activity is the primary cause of these changes. We can continue to mitigate GHG emissions by reducing our dependence on dirty energy like coal or by driving less, but there are certain changes that scientists believe will happen regardless of those efforts. These changes include extreme weather events, flooding, storm surge, and sea level rise. We must continue to mitigate emissions while evaluating our vulnerabilities related to climate changes and developing strategies to prepare ourselves to adapt.
- 2 Greenhouse gases include all of the following gases: carbon dioxide, methane, nitrous oxide, hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride.
- 3 Leadership in Energy and Environmental Design (LEED) provides a framework for building a holistic green building, providing the chance to create a healthy, resource-efficient, cost-effective building; one that enhances the lives and experiences of everyone who walks through its doors.
- 4 Cal. Code Regs. Title 14 sec. 15378(b).
- 5 *Tara v. City of W. Hollywood*, 194 P.3d 344, 354 (Cal. 2008) (quoting *No Oil, Inc. v. City of Los Angeles*, 529 P.2d 64, 77 n.5 (Cal. 1974)).
- 6 Public Resources Code sec. 21168.6.6; discussion in Kulkarni & Cremin, 2015.
- 7 *Tuolumne Jobs & Small Bus. Alliance v. Superior Court*, 59 Cal. 4th 1029 (2014). The court previously ruled that council-sponsored initiatives were subject to CEQA before being placed on the ballot. *Friends of Sierra Madre v. City of Sierra Madre*, 25 Cal. 4th 165 (2001).

- 8 See generally Tuolumne Jobs & Small Bus. Alliance v Superior Court; discussion in Kulkarni & Cremin, 2015.
- 9 H.B. 529, 61st Leg. Reg. Sess. (Mont. 2009).
- 10 Cal. Const. Art IV sec. 10(f).
- 11 Assembly Bill No. 81, 2009 Leg., 3d Extraordinary Sess., sec. 7 (Cal. 2009).
- 12 Assembly Bill No. 81, sec. 3(a).
- 13 AEG abandoned the project in March 2015, after the Oakland Raiders, the San Diego Chargers, and the St. Louis Rams proposed alternative stadium plans.
- 14 The developers also completed an environmental impact report as required under CEQA. The University of San Francisco (UCSF) expressed concerns over the traffic impacts resulting from 225 events per year, including 41 home games.
- 15 See generally, Memorandum written for a Land Use course taken at Santa Clara School of Law in the fall of 2012. Available at <http://sflanduse.blogspot.com/2013/10/will-warriors-stadium-have-enough.html>.
- 16 The hallmark of the Public Trust Doctrine is that trust lands belong to the public and are to be used to promote publicly beneficial uses that connect the public to the water.
- 17 Assembly Bill 1273.
- 18 See generally McAteer-Petris Act.
- 19 Assembly Bill 1273, sec. 4.
- 20 Assembly Bill 1273, sec. 4.
- 21 Assembly Bill 1273, sec. 5(a)(1–17).
- 22 Assembly Bill 1273, sec. 5(a)(3).
- 23 The city of Berkeley, California, adopted its first energy conversation ordinance in 1987.
- 24 The state of California signed Assembly Bill 802 into law in 2016, which requires energy benchmarking and disclosure for certain types of buildings, based on size beginning in 2017. This law and AB 758, which required the California Energy Commission to develop an energy action plan, created a road map to increase the efficiency of residential and commercial buildings throughout the state. Both of these bills recognize the unique position of local governments in helping their constituents reduce energy consumption and meet targets outlined in this laws.
- 25 See Assembly Bill 117 (2002), which enabled the formation of community choice aggregation (energy) programs in California.
- 26 The default offer for all customers is 57 percent. Customers can opt for up to 100 percent renewable energy or even select a 100 percent local option that guarantees that the power they pay for is generated within the program's territory (cities that have joined the program).
- 27 For example, Chevron granted over \$1 billion to the city of Richmond to implement its climate action plan and reduce GHG emissions.

References

- Adams, J. (2010, January 7). *Los Angeles, are you ready for some NFL football?* Retrieved from nbclosangeles.com
- Bonsignore, V. (2015, March 9). AEG shuts down plans to build downtown Farmers Field for NFL team. *Los Angeles Daily News*. Retrieved from www.dailynews.com
- Brekke, D. (2015, July 28). The big “if” in UCSF’s “support” for Golden State Warriors arena. *KQED News*. Retrieved from www.kqed.org
- California Golden Bears. (2016). *About Kabam Field*. Retrieved from www.calbears.com
- CDP. (2016). *Climate change program*. Retrieved from www.cdp.net
- City of Benicia. (2009). *Climate action plan*. Retrieved from www.sustainablebenicia.org/cap/indicators
- City of Berkeley. (2016a). *BESO phase-in schedule*. Retrieved from www.cityofberkeley.info/BESOSchedule/
- City of Berkeley. (2016b). *Residential Energy Conservation Ordinance (RECO)*. Retrieved from www.ci.berkeley.ca.us/reco/
- City and County of San Francisco. (2016). *San Francisco sea level rise action plan*.
- De Leon, K. (2009). *Waiving environmental review and land use planning requirements for football stadium project: Hearing on assembly bill 81 X3 before the assembly committee on appropriations, 2009 legislative extraordinary session* (Cal. 2009). Retrieved from <http://sf-planning.org/sea-level-rise-action-plan>

- Environmental Law Institute. (2016). *National Environmental Policy Act (NEPA)*. Retrieved from www.eli.org
- Frank, R. (2013, July 25). *Is the Golden State Warriors' proposed basketball arena a proper public trust use?* Retrieved from <http://legal-planet.org/2013/07/25/is-the-golden-state-warriors-proposed-basketball-arena-a-proper-public-trust-use/>
- Gonzales, N. (2016). Super sustainable Levi's Stadium hosts Super Bowl. *The Registry*. Retrieved from www.theregistrysf.com
- Gordon, I. (2015). Can Allen Hershkowitz's green sports movement turn fans into environmentalists? *Mother Jones*. Retrieved from www.motherjones.com
- Henly, A., Hershkowitz, A., & Hoover, D. (2012). *Game changer: How the sports industry is saving the environment*. New York, NY: Natural Resources Defense Council.
- Hiltzik, M. (2011, September 13). California special exemption for NFL stadium plan not so special. *Los Angeles Times*. Retrieved from www.latimes.com
- Kukura, J. (2010, May 7). *Judge blocks, tackles 49ers stadium lawsuit*. Retrieved from www.nbcbayarea.com
- Kulkarni, A., & Cremin, T. (2015, March 5). CEQA dodging tactics may catch on. *The San Francisco Daily Journal*. Retrieved from www.dailyjournal.com
- Lean Energy US. (2016a). *CCA by state*. Retrieved from www.leanenergyus.org/cc-by-state/
- Lean Energy US. (2016b). *What is CCA*. Retrieved from www.leanenergyus.org/what-is-cca/
- Legislature, close loophole exempting building projects from CEQA. [Editorial]. (2015, April 27). *Los Angeles Times*. Retrieved from www.latimes.com
- Matier, P., & Ross, A. (2013, February 15). *Warriors to build new arena, move back to S.F.* Retrieved from www.sfgate.com
- McGreevy, P., & Williams, C. (2011, September 3). California lawmakers unveil bill to expedite downtown football stadium plan. *Los Angeles Times*. Retrieved from www.latimes.com
- Mintz, H. (2010, May 5). Judge tosses one of Great America's lawsuits over stadium deal. *The Mercury News*. Retrieved from www.mercurynews.com
- Montana Legislature. (2016). *Chapter 5: How does MEPA compare with other state environmental policy acts?* Retrieved from <http://leg.mt.gov>
- Niska, M. (2014). Examining the history behind the construction of Levi's Stadium. *The Stanford Daily*. Retrieved from www.stanforddaily.com
- Nunez, F., & Pavley, F. (2006). *Assembly bill 32: The California Global Warming Solutions Act of 2006*. California State Assembly. Retrieved from www.arb.ca.gov/cc/ab32/ab32.htm
- Rosenberg, M. (2012, January 6). Great America finally agrees to 49ers stadium in Santa Clara, for a big price. *The Mercury News*. Retrieved from www.mercurynews.com
- San Benito County. (2015). *Del Webb at San Juan Oaks specific plan*, Chapter 4.7. Retrieved from <http://cosb.us/wp-content/uploads/SJO2015064.7-Greenhouse-Gases.pdf>
- San Francisco Bay Conservation and Development Commission (BCDC). (2012). *San Francisco Bay waterfront special area plan*. Retrieved from www.bcdc.ca.gov/sfwsap/SFWSAP_Final_2012.pdf
- San Francisco Bay Conservation and Development Commission (BCDC). (2016). *Activities requiring permit approval*. Retrieved from www.bcdc.ca.gov/permits
- Stark, K., Bird, W., & Stoll, M. (2015, July 29). Major S.F. Bayfront developments advance despite sea rise warnings. *San Francisco Public Press*. Retrieved from www.sfpublishpress.org
- State Lands Commission. (2015). *About the California state lands commission*. Retrieved from www.slc.ca.gov
- SustainableBusiness.com. (2012, September 7). *For professional sports teams, sustainability isn't just a game*. Retrieved from www.sustainablebusiness.com/index.cfm/go/news.display/id/24051
- U.S. Green Building Council. (2016). *LEED for building design and construction*. Retrieved from <http://leed.usgbc.org/bd-c.html>

A LITTLE GREEN

The European Union's efforts to promote environmental sustainability in sport

Arnout Geeraert

The European Union (EU) is a unique project of regional integration that has both supranational and intergovernmental characteristics. The EU member states have delegated, by means of treaties and secondary legislation, a number of executive, legislative, and judicial tasks to EU institutions like the European Commission, the Council of the EU,¹ the European Parliament, and the Court of Justice of the European Union (CJEU) (Pollack, 2003). EU institutions devise laws and policies in an increasing number of policy fields and expect (member) states, individuals, private enterprises, non-governmental organizations, and so on to abide by rules and policies established. Legislating is the dominant governance mode, yet the EU increasingly engages in policy making through non-hierarchical modes of governance, such as persuasion and bargaining, in order to achieve compliance (Börzel, 2010). Non-hierarchical modes of governance are especially prevalent in a number of more recent policy fields in which the EU does not hold a strong competence, such as sport.

The EU's policy competence in sport is both recent and limited (García & Weatherill, 2012).² Across policy areas, the EU institutions generally either hold exclusive competence or share competence with the EU member states. In the field of sport, however, the EU has a *supporting* competence, which means that it can only coordinate, supplement, and (financially) support the actions of the member states, whose competence cannot be superseded.³ Any harmonization of member states' laws is expressly prohibited. This does not preclude the EU from taking up an important role in both international and national (local) sports governance. Using non-hierarchical means, the EU institutions steer the behavior of member states and international federations (IFs) alike. First, the EU offers its member states the opportunity to coordinate their efforts and to share and implement best practices. To this end, it has, among other things, implemented light monitoring frameworks (i.e., benchmarking and reputation mechanisms associated with naming and shaming; de la Porte & Pochet, 2012; Ten Brink, Farmer, Wilkinson, Homeyer, & Kranz, 2005). A light monitoring framework was implemented in the field of sport to coordinate member states' efforts and to share best practices on health-enhancing physical activity guidelines (Council of the European Union, 2013b). Second, the EU has become an important actor in international sports governance because many rules issued by IFs fall under the EU's internal market rules, notably free movement law and competition law (Parrish, 2003).⁴ Seeking favorable regulatory treatment, large IFs aim to have a good relationship with the EU institutions (García, 2007). This gives the EU the potential to influence IF's behavior through

persuasion and bargaining (Geeraert & Drieskens, 2015; Geeraert, 2016a). Thus far, the impact of the EU's sports policy has remained limited, but more ambitious policy actions would likely translate into more significant outcomes (Geeraert, 2016a).

One area in which EU sports policy could lead to positive outcomes is the environment. In this regard, two challenges to the environment are particularly noteworthy. First, (major) sport events are known to cause significant environmental harm (Geeraert, 2016b; see also Chapter 8 of this handbook). IFs hold the rights to, and are ultimately responsible for, the organization of these events, and moreover, IF's regulatory influence over organized sport stretches from the international to the national and the local levels (Geeraert, 2016c). Second, the production and disposal of sports equipment (Subic, 2007; Subic, Mouritz, & Troynikov, 2009), the exercise of outdoor sport activities (Jagemann, 2004; Schemel & Erbguth, 2000; Wheeler & Nauright, 2006), and the building and operation of sports facilities (Bruhns & Jones, 2011; Van Poppel, 2011) pose environmental challenges to (the EU member) states. Relying on its potential to coordinate, support, and steer the actions of member states and IFs, the EU can confront these issues and promote environmental sustainability in sport. In fact, the EU employs an extensive and innovative environmental policy system (Jordan & Adelle, 2012). By promoting its environmental expertise and policy tools among member states and IFs, the EU can (indirectly) contribute to mitigating sport's environmental harm.

The EU acknowledges that sport poses a specific threat to the environment and that EU action is appropriate. The European Commission stresses that "the practice of sport, sport facilities and sport events all have a significant impact on the environment" (European Commission, 2007, p. 10). To address the issue "is important to promote environmentally sound management" and "sport organisations and sport event organisers should adopt environmental objectives in order to make their activities environmentally sustainable" (p. 10). These general observations have been translated into concrete policy actions. Does the EU fulfill its potential in mitigating the environmental harm caused by sport? Taking stock of the EU's efforts to promote environmental sustainability in sport, this chapter explores to what extent EU sports policy has implemented environmental objectives and whether these have had any impact.⁵ In order to explain the status quo and to identify the way forward, it also analyzes the (potential) barriers to integrating environmental sustainability in the EU's sport-related actions. Before doing so, however, it is necessary to frame the issue in a broader conceptual discussion of the EU's commitment to integrating environmental concerns in non-environmental policy areas.

Environmental policy integration at the EU level

In order for the EU to promote environmental sustainability in sport, environmental objectives need to be integrated in the EU's sport-specific actions. On a global level, the notion of environmental policy integration (EPI) was adopted to describe the process of integrating environmental protection into non-environmental policies and activities. The World Commission on Environment and Development's landmark report *Our Common Future* (WCED, 1987) introduced EPI to a global audience in 1986. This report resulted in widespread international political backing and also in political support for EPI at the EU level. The EU's commitment to EPI has been enshrined in the treaties, making it a quasi-constitutional requirement (Jordan, Schout, & Unfried, 2008). Nonetheless, it is by no means clear *who* is responsible for integrating EPI (Kraemer, 2001), *what* should be integrated, or *how far* integration should go (Hill & Jordan, 1993; Kraemer, 2012; Nollkaemper, 2002). This lack of legal clarity has prompted a selective interpretation of EPI by the different parts of the EU and, consequently, inconsistent EPI across sectoral policies (Jordan & Schout, 2006; Jordan, Schout, & Unfried, 2008).

The inconsistent implementation of EPI has inspired conceptual sophistication in academic circles (Adelle & Russel, 2013; Jordan & Lenschow, 2010). Two examples are particularly noteworthy. First, an important distinction is made with regard to where EPI occurs (Lafferty & Hovden, 2003). Horizontal EPI refers to the implementation of an overarching EPI strategy by a central governmental authority, whereas vertical EPI refers to “the extent to which a particular governmental sector has taken on board and implemented environmental objectives” (Lafferty, 2002, p. 16). Both horizontal and vertical EPI are difficult to achieve. According to Jordan and Lenschow (2010), they demand “the penetration of large parts of the political machinery throughout the entire policy cycle” (p. 156). Focusing on the specific context of a government sector, namely the “institutional decision-making routines, power relationships and the external context” (Persson, 2007, p. 27), can help identify barriers to vertical EPI. Second, from a procedural point of view, EPI can occur in the process of sector policy making, in sector policy outputs, and in sector environmental impacts (Jordan & Lenschow, 2010; Persson, 2004, 2007; Storbjörk & Isaksson, 2013). Implementing EPI is particularly difficult in policy outputs and environmental impacts, because this requires actors to make trade-offs and shoulder responsibilities (Persson, 2007, p. 29; Storbjörk & Isaksson, 2013).

The next section focuses on vertical EPI and takes stock of policy outputs, particularly the environmental objectives that have been implemented in the EU's sports policy, and their (potential) impact.⁶ The section thereafter explains the status quo and identifies the way forward by uncovering the main barriers to implementing EPI in EU sports policy.

Environmental policy integration in EU sports policy

The absence of both legal clarity and top-down coordination regarding EPI has given rise to inconsistent EPI across EU sectoral policies (Jordan & Schout, 2006, p. 77; Jordan et al., 2008, p. 164). Some sectoral policies simply take on board environmental objectives, whereas others put EPI at the heart of the decision-making process (Hill & Jordan, 1993; Jordan & Lenschow, 2010; Lafferty & Hovden, 2003). In general, however, attention for the environment has been waning across EU sectoral policies (Jordan & Lenschow, 2010; Jordan & Schout, 2006, p. 73; Jordan et al., 2008; Pisano, Berger, Endl, & Sedlacko, 2011). This section explores to what extent EU sports policy has implemented EPI. The environmental objectives implemented in EU sports policy can be grouped together in two categories: (1) the promotion of classic environmental instruments and (2) the publication of recommendations on the environmental sustainability of major sport events. It is shown that EU efforts thus far failed to have a significant impact.

Environmental instruments

Over the years, the EU has devised and deployed a toolbox of instruments to promote environmental sustainability (Jordan & Lenschow, 2008). *Green Budgeting*, the *EU Eco-Management and Audit Scheme*, *Green Public Procurement*, and the *EU Ecolabel Award Scheme* are four primary tools the European Commission promotes in relation to sport (European Commission, 2007). Measuring the impact of these instruments in terms of environmental outcomes is extremely difficult (Mickwitz, 2012). Here, we explore the success of environmental instruments by examining the EU and sport actors' implementation of these measures (see Persson, 2004, pp. 22–23; Persson, 2007, p. 29). This is done on the basis of implementation reports by the European Commission.

Green budgeting

Green budgeting allocates space in public budgets for environmental policies. It has not been broadly implemented in EU sports policy. The reason is that sport falls outside the customary efforts for green budgeting at the EU level (Medarova-Bergstrom et al., 2011). This is logical given that the EU has a relatively small sporting budget. Moreover, beneficiaries of EU sport funding are public bodies or civil society organizations active in the area of grassroots (and not professional) sport (European Commission, 2011b, p. 13). The prospects of green budgeting in relation to EU sports policy are therefore a priori rather poor.

Indeed, even though the commission stresses potential ecological implications of any specific projects or events be “duly considered” when evaluating applications for sport funding, EU documents indicate that green budgeting was implemented only once (European Commission, 2011c): co-funding for the organization of the 2009 European Youth Olympic Festival in Tampere included requirements regarding sustainable development (European Commission, 2011d). It does not appear that similar requirements will be implemented for future events. The first full-fledged funding program for sport-specific EU actions (adopted in December 2013) foresees financial support for not-for-profit European sport events (Council of the European Union, 2013a). Environmental criteria, however, are not among the criteria used to assess and award these events (European Commission, 2014).

EU eco-management and audit scheme

The EU eco-management and audit scheme (EMAS) is a management tool for public administrations as well as private companies located inside or outside the EU (Council of the European Union, 2001, 2009). It is a voluntary instrument that acknowledges organizations that improve their environmental performance on a continuous basis. EMAS helps organizations reduce their environmental impact by diagnosing a more effective use of resources (Iraldo, Testa, & Frey, 2009). EMAS enables the identification of the most critical environmental aspects of the building and operation of sport facilities and sporting events; it addresses these aspects through objectives, programs, and procedures (TOROC, 2006). The organizing committee for the 2006 Winter Olympic Games in Turin (TOROC), for example, produced a handbook on how to apply EMAS to (large) sporting events (TOROC, 2006). The European Commission encourages EMAS participation by international and European sport organizations and other sport stakeholders. In particular, it promotes EMAS with regard to major sport events (European Commission, 2007).

EMAS implementation by sporting actors remains limited. According to the commission, about eight sporting events and 28 sport facilities have been awarded EMAS certification (European Commission, 2010, 2012). The commission lists the Nürnberg Ring race circuit, golf courses, the Turin 2006 Winter Olympics, the stadiums for the 2008 UEFA European championship in Austria, the Ryder Cup, and the London 2012 Olympics as key examples (European Commission, 2011d).⁷ The majority of these events and facilities, however, received or applied for EMAS certification before the European Commission started encouraging sports actors' participation in EMAS. Moreover, it appears that especially sport mega-event organizers have turned their attention to international standards on sustainability provided by the International Organization for Standardization (ISO).⁸

Green public procurement

Public procurement refers to public authorities' purchase of goods, services, or works. Green public procurement (GPP), then, takes place when contracting authorities use environmental

criteria to decide from whom to purchase goods or services. Increased demand from public authorities for “greener” goods stimulates and enlarges markets for environmentally friendly products and services (Li & Geiser, 2005). At the EU level, GPP is a voluntary instrument. Consequently, member states can determine the extent to which they implement GPP (European Commission, 2008). The European Commission “promote[s] green procurement in its political dialogue with member states and other concerned parties” (European Commission, 2007, p. 10).

GPP offers important opportunities for mitigating sport’s environmental impact because public financial support is often vital for sport (see Eurostrategies, Amnyos, CDES, & Deutsche Sporthochschule Köln, 2011). Public support measures in sport mostly finance either infrastructure or activities or individual sports clubs. Moreover, sporting events are often directly or indirectly supported by public means. However, the implementation reports for sport-specific EU actions do not mention any progress with regard to promoting GPP in sport (European Commission, 2010, p. 7; European Commission, 2012, p. 11).

EU Ecolabel Award Scheme

The labeling of products to indicate whether or not they have been produced by environmentally friendly processes enables consumers to discriminate between products. This is said to prompt a reduced demand for products produced by methods that are detrimental to the environment (Mattoo & Singh, 1994). The EU adopted the EU Ecolabel Award Scheme, a regulation on name labeling schemes (Council of the European Union, 2010).⁹ The commission encourages leading international and European sport organizations and other sport stakeholders to participate in the Ecolabel Award scheme, and promotes the scheme during major sport events (European Commission, 2007). Ecolabels seem particularly useful with regard to the production of certain sports equipment, which potentially has a considerable negative environmental impact (Subic, 2007; Subic, Mouritz, & Troynikov, 2009). Tourist accommodations also employ ecolabels, and organizers of big sporting events can reference these labels to point sports fans to environmentally friendly accommodations.

TOROC promoted the EU Ecolabel for tourist accommodation in the surrounding region (TOROC, 2006). However, the implementation reports for sport-specific EU actions do not list any achievements with regard to the implementation of the Ecolabel (European Commission, 2010, p. 7; 2012, p. 11).

Recommendations on the environmental sustainability of major sport events

In order to inform future sporting actions and spread best practices, the EU has established expert groups on certain key topics related to sport (Council of the European Union, 2011, 2014). Member states nominate experts as members of the respective groups, and participation is voluntary. The expert group can decide to invite other participants, such as independent experts, representatives of the sport movement, and other stakeholders. In practice, representatives of IFs and other sports stakeholders participate in these groups. The expert groups have clear deliverables, which usually include recommendations or guidelines.

In 2014, the member states’ ministers of sport (united in the Council of the EU) requested the establishment of an expert group on the economic dimension of sport. The expert group had to produce, inter alia, recommendations on major sport events, in particular on legacy aspects (with a focus on social, economic, and environmental sustainability) (Council of the European Union, 2014). On May 31, 2016, the Council of the EU adopted the expert groups’ recommendations

as (non-binding) conclusions (Council of the European Union, 2016; EU Expert Group on the Economic Dimension of Sport, 2016). The conclusions address both the EU (member states) and the sports movement, and they encourage, among others, the exchange of good practices and the development of tools to measure the environmental impact and legacy of major events.

It is too early to assess the (potential) impact of the expert group's conclusions. The European Commission, as the executive branch of the EU, will devise measures for implementation, such as funding studies and developing a dialogue with the member states and the sports movement on the topic. It must be stressed that the conclusions do not recommend the adoption of specific measures to promote environmental sustainability in sport. Moreover, the (vague) environmental objectives outlined in the conclusions fight for attention with recommendations regarding social and economic sustainability and good governance.

The barriers to integrating environmental objectives in EU sports policy

Thus far, EU sports policy's environmental objectives have failed to have a significant impact in terms of their implementation by EU and sport actors. Environmental considerations are not placed at the heart of the decision-making process (cf. Hill & Jordan, 1993; Jordan & Lenschow, 2010; Lafferty & Hovden, 2003). As a result, member states and sport actors are not actively encouraged to implement environmental objectives and performance is not seriously monitored and evaluated through target setting and monitoring (cf. H eritier, 2002). Given that EU sports policy is still in its infancy, this may seem logical. Nonetheless, it appears that EU attention for environmental harm caused by sport has been waning in recent years, this despite the quasi-constitutional requirement at the EU level to implement EPI. True, the recent recommendations on legacy aspects of major sport events address environmental issues, but the environmental objectives listed are broad and vague and compete with other governance and legacy aspects for attention. Moreover, EU policy documents have not mentioned environmental instruments since 2007, when the European Commission announced it would promote the EMAS, GPP, and the EU Ecolabel Award Scheme (European Commission, 2007). Subsequent policy documents do not include clear environmental objectives.

Why is this the case and will it change in the future? This section focuses on institutional decision-making routines, power relationships, and the external context in order to identify the barriers to integrating environmental objectives into EU sports policy. It identifies four barriers: the lack of hierarchical EPI coordination, the shift to (the economic pillar of) sustainable development, autonomy of international sport organizations, and heterogeneous member state preferences regarding public intervention in sport.

The lack of hierarchical EPI coordination

The first barrier concerns the lack of EU-coordinated, top-down EPI (Jordan & Schout, 2006). Given the EU's supporting sport competence, the member states ultimately define EU sports policy. The member states do not attach priority to environmental sustainability in sport. Even though they place importance on sustainability as such, attention falls almost exclusively on the economic pillar of sustainable development (Council of the European Union, 2011, 2014).

At the EU level, there is no horizontal mechanism that induces member states to give attention to environmental issues in sectoral policies. High-level EU efforts to this end have largely failed. The so-called "Cardiff process" was launched in 1998 by the member states to integrate environmental considerations into the activities of different Council of the EU formations

(Jordan & Schout, 2006). Although it helped to push EPI up on the EU agenda, the Cardiff process failed to have a substantial impact on sectoral policy making (Jordan & Schout, 2006; Jordan et al., 2008; Wilkinson, Skinner, & Fergusson, 2002). Waning political commitment to the process eventually led to its political death (Jordan & Schout, 2006; Jordan et al., 2008).

The shift to (the economic pillar of) sustainable development

The second barrier concerns a general, EU-level attention shift from EPI to sustainable development (EEA, 2005; Jordan & Schout, 2006). Conceptually, EPI and the notion of sustainable development overlap. Sustainable development implies balancing economic, social, and environmental issues. EPI, on the other hand, is mainly concerned with the integration of environmental protection. Attention shifts from EPI toward sustainable development have thus negatively affected EPI because “the notion of *what* should be integrated is broadened” (Steurer, 2008, p. 107, emphasis added).

High-level strategies aimed at strengthening the EU economy have further harmed EPI by placing almost exclusive attention on the economic pillar of sustainable development (Jordan & Lenschow, 2010; Jordan & Schout, 2006; Jordan et al., 2008; Pisano, Berger, Endl, & Sedlacko, 2011). In 2000, the EU heads of state and government established the Lisbon Process, a 10-year strategy set out to make the EU the most dynamic and competitive knowledge-based economy. In 2010, the Europ. 2020 Strategy was adopted to help dig Europe out of the financial and economic crisis. Placing strong emphasis on economic and financial policy making, the Europ. 2020 Strategy sent the message that “economic and financial issues prevail over environmental concerns” (Pisano et al., 2011, p. 45).

The shift towards (the economic pillar of) sustainable development is clearly visible in EU sports policy documents. Three concrete examples are noteworthy. In its most recent sport policy document, the commission addressed the issue of sustainability entirely within the context of the Europ. 2020 Strategy (jobs and economic growth) (European Commission, 2011a). The European Parliament puts greater emphasis on the economic and social pillars of sustainable development (European Parliament, 2012). Finally, in the most recent EU work plan for sport, the member states stress the importance of sustainable development in and through sport entirely within the context of the Europ. 2020 strategy (Council of the European Union, 2011).

The autonomy of international sport organizations

The third barrier arises from international sport organizations' autonomy. Autonomy from formal regulatory public interference has become an obsession for IFs (Geeraert, Mrkonjic, & Chapelet, 2015). IFs have never formulated a clear definition or justification for sport's autonomy. It is a vague concept, one used by the sporting world as a *passé-partout* to justify self-governance. Powerful IFs have lobbied the EU institutions and thus sought and registered support for the idea that the EU institutions should respect their autonomy (European Council, 2000, 2008; García & Weatherill, 2012). At the EU level, intervening in the business of IFs remains a sensitive issue, and this complicates (environmental) target setting and monitoring.

Heterogeneous member state preferences regarding public interventions in sport

The final barrier is erected by the member states' heterogeneous preferences with regard to the appropriateness of government/ EU intervention in sport (Parrish, 2003). Sport is a sensitive

policy area, linked to national cultures and traditions. The member states therefore generally seek to retain national control over sports issues. They prefer a minimal role for the EU in the business of IFs (Geeraert, 2016a).

Conclusion

This chapter argues that to promote environmental sustainability in sport, the EU can rely on its potential to coordinate, support, and steer the actions of member states and IFs. It demonstrates, however, that EU sports policy's environmental objectives have thus far failed to have a significant impact. Member states and sport actors are not actively encouraged to implement environmental objectives, and performance is not seriously monitored or evaluated through target-setting and monitoring. Moreover, despite the quasi-constitutional requirement to implement EPI, EU-level attention for sport-induced environmental harm has waned in recent years.

Given the EU's limited sporting competence, member states must demonstrate a willingness to unlock the EU's potential to promote environmental sustainability in sport in order to upset the status quo. Achieving such willingness will be difficult – here we identify four barriers that complicate EPI in EU sports policy, namely the lack of hierarchical EPI coordination, the EU's shift to sustainable development, sport organizations' autonomy, and member states' heterogeneous preferences regarding public intervention in sport. Nonetheless, sport's negative environmental impact imposes a high, accruing cost on society, one that far exceeds the EU's costs of implementing serious mitigating efforts. Perhaps conveying such cost-benefit arguments to the member states will make implementing EPI in EU sports policy a less daunting task.

Notes

- 1 The Council of the EU brings together the ministers of the member states. The precise composition of the Council depends on the items discussed in a particular meeting. When sport matters are discussed, the Council is de facto composed of the ministers responsible for sport at the member state level.
- 2 Since the 2009 ratification of the Lisbon Treaty, the EU has a supporting sport competence. This competence is enshrined in Article 165 of the Treaty on the Functioning of the European Union and Article 6 of the Treaty on European Union.
- 3 Other areas in which the EU hold a supporting competence include health, industry, culture, tourism, education, vocational training, youth, civil protection, and administrative cooperation.
- 4 The CJEU's infamous 1995 *Bosman* ruling (Case C-415/93 [1995] ECR I-4921) unearthed the (potentially) far-reaching effects of the application of EU internal market law on both ISO's functioning. The CJEU's ruling in *Meca-Medina* in 2006 (Case C-519/04 [2006] ECR II-3291) further highlighted the large array of sports rules potentially infringing EU (competition) law (Weatherill, 2006).
- 5 The chapter draws on Geeraert (2016d).
- 6 This contribution defines EU sports policy as sport-specific measures that are laid down in relevant EU policy documents.
- 7 Note that this list could not be verified.
- 8 Notably ISO 20121: 2012, which specifies requirements for a sustainability management system for any type of event.
- 9 The 2010 regulation constitutes the second revision of the Ecolabel Award Scheme since its introduction in 1992.

References

- Adelle, C., & Russel, D. (2013). Climate policy integration: A case of déjà vu? *Environmental Policy and Governance*, 23, 1–12.
- Börzel, T. (2010). European governance: Negotiation and competition in the shadow of hierarchy. *Journal of Common Market Studies*, 48, 191–219.

- Bruhns, H., & Jones, P. (2011). *CIBSE review of energy benchmarks for Display Energy Certificates: analysis of DEC results to date*. London: CIBSE Benchmarks Steering Committee.
- Council of the European Union. (2001). Regulation No 761/2001 of the European Parliament and of the Council of 19 March 2001 allowing voluntary participation by organisations in a Community eco-management and audit scheme. *Official Journal of the European Union*, 114, 0001–0029.
- Council of the European Union. (2009). Regulation No 1221/2009 of the European Parliament and of the Council of 25 November 2009 on the voluntary participation by organisations in a Community eco-management and audit scheme (EMAS). *Official Journal of the European Union*, 342, 0001–0045.
- Council of the European Union. (2010). Regulation (EC) No 66/2010 of the European Parliament and of the Council of 25 November 2009 on the EU Ecolabel. *Official Journal of the European Union*, 27, 0001–0019.
- Council of the European Union. (2011). Resolution on a European Union Work Plan for Sport for 2011–2014 (2011/C 132/01). *Official Journal of the European Union*, 0001–0005.
- Council of the European Union. (2013a). Regulation establishing ‘Erasmus+’: The Union programme for education, training, youth and sport (2013/L 347/50). *Official Journal of the European Union*, 56, 0050–0073.
- Council of the European Union. (2013b). Recommendation on promoting health-enhancing physical activity across sectors (2013/C 354/01). *Official Journal of the European Union*, 56, 0001–0005.
- Council of the European Union. (2014). Resolution on the European Union Work Plan for Sport (2014–2017) (2014/C 183/03). *Official Journal of the European Union*, 57, 0012–0017.
- Council of the European Union. (2016, May 31). *Council conclusions on enhancing integrity, transparency and good governance in major sport events*. [Press release]. Retrieved from www.consilium.europa.eu/press-releases-pdf/2016/5/47244641662_en.pdf
- de la Porte, C., & Pochet, P. (2012). Why and how (still) study the open method of co-ordination (OMC)? *Journal of European Social Policy*, 22, 336–349.
- EU Expert Group on the Economic Dimension of Sport. (2016). *Recommendations on major sport events, in particular on legacy aspects with a focus on social, economic and environmental sustainability. Deliverable 2*. Brussels: European Commission.
- European Commission. (2007). *White paper on sport*, COM (2007) 391 final.
- European Commission. (2008). *Public procurement for a better environment*, COM (2008) 400 final.
- European Commission. (2010). *Action plan “Pierre de Coubertin”. Implementation report. Implementation period: July 2007–December 2012*. Brussels: European Commission.
- European Commission. (2011a). *Developing the European Dimension in Sport*, COM (2011) 12 final.
- European Commission. (2011b). *Erasmus for all: The EU programme for education, training, youth and sport*, COM (2011) 787 final.
- European Commission. (2011c). *Commission staff working paper: Impact assessment on sport actions, accompanying document to the proposal for a regulation establishing a single education, training, youth and sport programme for the period 2014–2020*, SEC (2011) 1402 final.
- European Commission. (2011d). *Commission staff working document, – impact assessment accompanying document to the communication ‘Developing the European Dimension in Sport’*, SEC (2011) 67 final.
- European Commission. (2012). *White paper on sport, action plan “Pierre de Coubertin”; Communication on “Developing the European Dimension in Sport”; EU work plan for sport. Implementation report. Implementation period: July 2007–December 2014*. Brussels: European Commission.
- European Commission. (2014, January 24). *Report on the implementation of the European union work plan for sport 2011–2014*. COM (2014) 22.
- European Council. (2000, December 7–9). *Declaration on the specific characteristics of sport and its social function in Europe, of which account should be taken in implementing common policies*, Presidency Conclusions. Nice European Council.
- European Council. (2008, December 11–12). *Declaration on sport*, Presidency Conclusions. Brussels European Council.
- European Environment Agency (EEA). (2005). *Environmental policy integration in Europe: Administrative culture and practices* (EEA Technical Report No. 5/2005). Retrieved from www.eea.europa.eu/publications/technical_report_2005_5

- European Parliament. (2008). *Resolution of 8 May 2008 on the White Paper on Sport*. 2007/2261(INI).
- European Parliament. (2012). *Resolution of 2 February 2012 on the European dimension in sport*, 2011/2087(INI).
- Eurostrategies, Amnyos, CDES, & Deutsche Sporthochschule Köln. (2011). *Study on the funding of grassroots sports in the EU with a focus on the internal market aspects concerning legislative frameworks and systems of financing* (Eurostrategies Final Report No. 1). Retrieved from http://ec.europa.eu/internal_market/top_layer/docs/Executive-summary_en.pdf
- García, B. (2007). UEFA and the European Union: From confrontation to co-operation? *Journal of Contemporary European Research*, 3, 202–223.
- García, B., and Weatherill, S. (2012). Engaging with the EU in order to minimize its impact: Sport and the negotiation of the Treaty of Lisbon, *Journal of European Public Policy*, 19, 238–256.
- Geeraert, A. (2016a). *The EU in international sports governance: A principal-agent perspective on EU control of FIFA and UEFA*. Basingstoke/New York, NY: Palgrave Macmillan.
- Geeraert, A. (2016b). Theorizing the governance of sport mega-events: A principal-agent perspective. In S. Frawley (Ed.), *Managing sport mega-events* (pp. 24–36). London: Routledge.
- Geeraert, A. (2016c). The governance of international sport organisations. In B. Houlihan & D. Malcolm (Eds.), *Sport and society* (pp. 413–437). London: Sage.
- Geeraert, A. (2016d). It's not that easy being green: The environmental dimension of the European Union's sports policy. *Journal of Sport and Social Issues*, 40, 62–81.
- Geeraert, A., & Drieskens, E. (2015). The EU controls FIFA and UEFA: A principal-agent perspective. *Journal of European Public Policy*, 22, 1448–1466.
- Geeraert, A., Mrkonjic, M., & Chappelet, J-L. (2015). A rationalist perspective on the autonomy of international sport governing bodies: Towards a pragmatic autonomy in the steering of sports, *International Journal of Sport Policy and Politics*, 7, 473–488.
- Héritier, A. (2002). New modes of governance in Europe: Policy-making without legislating? In A. Héritier (Ed.), *Common goods: Reinventing European and international governance* (pp. 185–206). Lanham, MD: Rowman & Littlefield.
- Hill, J., & Jordan, J. (1993). The greening of government: Lessons from the White Paper process. *ECOS*, 14(3–4), 3–9.
- Iraldo, F., Testa, F., & Frey, M. (2009). Is an environmental management system able to influence environmental and competitive performance? The case of the eco-management and audit scheme (EMAS) in the European union. *Journal of Cleaner Production*, 17, 1444–1452.
- Jagemann, H. (2004). Sports and the environment: Ways towards achieving the sustainable development of sport. *The Sport Journal*, 7(1).
- Jordan, A., & Adelle, C. (2012). *Environmental policy in the European Union: Contexts, actors and policy dynamics* (3rd ed.). London/Sterling: Earthscan.
- Jordan, A., & Lenschow, A. (2008). Integrating the environment for sustainable development: An introduction. In A. Jordan & A. Lenschow (Eds.), *Innovation in environmental policy? Integrating the environment for sustainability* (pp. 3–23). Cheltenham: Edward Elgar.
- Jordan, A., & Lenschow, A. (2010). Environmental policy integration: A state of the art review. *Environmental policy and governance*, 20, 147–158.
- Jordan, A., & Schout, A. (2006). *The coordination of the European Union: Exploring the capacities of networked governance*. Oxford: Oxford University Press.
- Jordan, A., Schout, A., & Unfried, M. (2008). The European Union. In A. Jordan & A. Lenschow (Eds.), *Innovation in environmental policy? Integrating the environment for sustainability* (pp. 159–179). Cheltenham: Edward Elgar.
- Kraemer, A. (2001). *Results of the Cardiff process: Report to the Federal German Environment Agency and the Federal Environment Ministry*. Ecologic: Berlin.
- Kraemer, L. (2012). The dispersion of authority in the European Union and its impact on environmental legislation. In F. Wijten, K. Zoeteman, & J. Pieters (Eds.), *A handbook of globalisation and environmental policy* (pp. 362–386). Cheltenham: Edward Elgar.
- Lafferty, W. (2002). Adapting government practices to the goals of sustainable development, *Improving governance for sustainable development*, OECD seminar 22–23 November 2001. Paris: OECD.

- Lafferty, W., & Hovden, E. (2003). Environmental policy integration: Towards an analytical framework. *Environmental Politics*, 12(3), 1–22.
- Li, L., & Geiser, K. (2005). Environmentally responsible public procurement (ERPP) and its implications for integrated product policy (IPP). *Journal of Cleaner Production*, 13, 705–715.
- Mattoo, A., & Singh, H.V. (1994). Eco-labelling: Policy considerations. *Kyklos*, 47(1), 53–65.
- Medarova-Bergstrom, K., Baldock, D., Gantioler, S., Hart, K., Kettunen, M., & Volkery, A. (2011). Mainstreaming the environment and climate change in the post-2013 EU budget. *Directions in European Environmental Policy*, 4, 1–8.
- Mickwitz, P. (2012). Evaluation. In A. Jordan & C. Adelle (Eds.), *Environmental policy in the European Union* (pp. 267–286). London: Earthscan.
- Nollkaemper, P.A. (2002). Three conceptions of the integration principle in international environmental law. In A. Lenschow (Ed.), *Environmental policy integration: Greening sectoral policies in Europe* (pp. 22–32). London: Earthscan Publications.
- Parrish, R. (2003). *Sports law and policy in the European Union*. Manchester: Manchester University Press.
- Persson, A. (2004). *Environmental policy integration: An introduction*. Stockholm: SEI.
- Persson, A. (2007). Different perspectives on EPI. In M. Nilsson & K. Eckerberg (Eds.), *Environmental policy integration in practice: Shaping institutions for learning* (pp. 24–48). London: Earthscan.
- Pisano, U., Berger, G., Endl, A., & Sedlacko, M. (2011). *Sustainable development governance & policies in the light of major EU policy strategies and international developments* (ESDN quarterly reports No. 22). Retrieved from www.sd-network.eu/?k=quarterly%20reports&report_id=22
- Pollack, M.A. (2003). *The engines of European integration. Delegation, agency and agenda-setting in the EU*. New York, NY: Oxford University Press.
- Schemel, H., & Erbguth, W. (2000). *Handbuch sport und umwelt*. Aachen: Meyer und Meyer.
- Steurer, R. (2008). Strategies for sustainable development. In A. Jordan & A. Lenschow (Eds.), *Innovation in environmental policy? Integrating the environment for sustainability* (pp. 93–113). Cheltenham: Edward Elgar.
- Storbjörk, S., & Isaksson, K. (2013). “Learning is our Achilles heel”. Conditions for long-term environmental policy integration in Swedish regional development programming. *Journal of Environmental Planning and Management*, 57, 1023–1042.
- Subic, A. (2007). *Materials in sports equipment 2*. Cambridge: Woodhead Publishing and CRC Press.
- Subic, A., Mouritz, A., & Troynikov, O. (2009). Sustainable design and environmental impact of materials in sports products. *Sports Technology*, 2(3–4), 67–79.
- Ten Brink, P., Farmer, A., Wilkinson, D., Homeyer, I., & Kranz, N. (2005). *Exploration of options for the implementation of the Open Method of Coordination (OMC) for environmental policy*. London: Institute for European Environmental Policy (IEEP) and Ecologic.
- TOROC. (2006). *Guidance document on the implementation of EMAS in sporting events*. Turin: TOROC.
- Van Poppel, M. (2011). De zwembadsector in evolutie: Stabiël, maar niet windstil. *Vlaams tijdschrift voor sportbeheer*, 226, 23–30.
- Weatherill, S. (2006). Anti-doping revisited – the demise of the rule of “purely sporting interest”? *European Competition Law Review*, 27, 645–657.
- Wheeler, K., & Nauright, J. (2006). A global perspective on the environmental impact of golf. *Sport in Society*, 9, 427–443.
- Wilkinson, D., Skinner, I., & Fergusson, M. (2002). *The future of the Cardiff process – a report for the Danish Ministry for the Environment*. London: IEEP.
- World Commission on Environment and Development (WCED). (1987). *Our common future*. Oxford: Oxford University Press.

ENVIRONMENTAL SUSTAINABILITY AND GOVERNANCE IN THE 2012 LONDON GAMES

Vassil Girginov

The Olympic and Paralympic Games are essentially an exercise in governance: they start as an idea of a few, before becoming an issue of national prestige and a passion of many. The Games involves a complex process of negotiations with a myriad of stakeholders at local, national, and international levels, investment of significant public and private resources, and interfering with the natural environment. This chapter addresses the governance of sustainability in the 2012 London Olympics. It first examines the conceptual evolution of the environmental debate and proceeds by tracing the development of environmental thinking and practices within the Olympic Movement and its practical application in the case of London.

The environmental sustainability debate

The relationship between humans and the environment is fundamentally an issue of ontology that has a deeply-rooted history in the value systems of various civilizations. Commentators pointed out the role of religions both as an agent of environmental degradation and a repository of ecological wisdom long before modern science took charge of the debate (Gottlieb, 1996).

The environmental sustainability discourse emerged in the early 1970s, but its intellectual roots can be traced down to much earlier times (Goodland, 1995; Mebratu, 1998). Further to religious beliefs, this discourse has been shaped by contributions from a number of scientific disciplines. Malthus' (1766–1834) economic theory of limits is considered to be the first work to foresee the limits to growth caused by resource scarcity and the subsequent need to protect them. Political economy scientists criticized the failure of traditional economics to bring incommensurable “non-economic factors” into the policy-making process. Schumacher (1989) extended the debate by drawing attention to a number of important points concerning the destructive role of organized systems, the rapid depletion of natural resources and destruction of the environment, the importance of human scale in the use of technology, accounting for non-economic factors in policy making, and the need for closeness of human beings to nature. Olympic scholars have entered the debate since the early 1990s and made important contributions (e.g., da Costa, 1992; Frey, Iraldo, & Melis, 2008; Girginov & Hills, 2009; May, 1995; Mol, 2010; Schmied et al., 2007).

Quental, Lourenço, and da Silva (2011) summarized scholarly attempts for documenting the theoretical foundations of the modern concept of sustainable development and distinguished four fundamental and integrated sustainability principles that underpin political action and promote the change needed in thinking and practice. These include the normativity principle concerned with adhering to certain norms and behaviors; the equity, concerned with justice and fairness across generations, gender, geography, and procedures; integration, which implies that all principles should be applied simultaneously; and the dynamism principle, which suggests that sustainable development is an evolutionary process and not an end state.

The environmental sustainability debate was further framed by a number of successive high level international policy gatherings. In 1972 the UN Conference on Human Environment in Stockholm moved the discourse into the management plane by highlighting the importance of environmental management and the use of environmental assessment as a management tool. Another highly influential conceptual contribution that integrated the environment and development into an umbrella concept of conservation came in the form of the 1980 World Conservation Strategy. It was a product of the joint efforts of the International Union for the Conservation of Nature and the World Wildlife Fund for Nature and the United Nations Environment Programme. In 1987, the World Commission on Environment and Development (WCED), chaired by the Norwegian Prime Minister, Gro Harlem Brundtland, published *Our Common Future*, which is considered by many commentators as the blueprint for sustainable development. In addition to defining sustainable development, the report established addressing the needs of the poor as a political priority and reiterated the limitations of technology and the detrimental effects of organized structures. Brundtland's environmental standing is also largely credited for earning the small Norwegian town of Lillehammer the right to host the 1994 Winter Olympic Games. The political impetus of the 1980s was continued by the first global Earth Summit in Rio de Janeiro in 1992, which produced several important international documents including the Rio Declaration, Agenda 21, and conventions on desertification, biodiversity, and climate change. The International Olympic Committee (IOC) attended the summit and later published Olympic Movement's own Agenda 21 (IOC, 1999). The 21st UN Climate Change Conference in 2015 produced the Paris Agreement, which is a legally binding document on the reduction of climate change.

Scientific and political framing of the environmental sustainability debate, albeit under different guises, has demonstrated three tendencies. First, scientific and political emphasis has shifted over time favoring different political and practical priorities, which renders sustainability as a social construction process. Second, both science and politics have tried to tame human systems and nature by making them more manageable, which raises the issue of how to govern this process nationally and internationally. Finally, sustainability is a contentious concept with clear moral, ideological, and political connotations. The neo-liberal models of economic growth and their unfulfilled promises of social progress and equality have been criticized for the lack of regard to human development (Haq, 1995).

The conceptual grounding and political meaning of sustainability has been challenged by a number of commentators. McNeill (2007) suggested that "the idea of 'sustainable development' . . . sought to extend and supplement – rather than directly confront – the established wisdom" (p. 13). Dresner (2003) also argued that the very idea of sustainability has arisen out of increasing pessimism about the capacity of human institutions to handle problems that are far less challenging than dealing with an uncertain future. Therefore, sustainability is not a radically new idea designed to curb growth, but rather an attempt to redirect it. Kallio, Nordgerg, and Ahonen (2007) described it as an oxymoron: "While obviously a powerful and important

concept, due to its ambiguousness, sustainable development lacks the real power of change” (p. 44). It follows that sustainable governance in the context of the Olympics is also an ambiguous concept, as it tries to satisfy the Games’ insatiable drive for faster, higher, stronger (growth) while delivering equality, solidarity, and accountability across all sports and groups around the world (Girginov & Hills, 2008).

Environmental sustainability, therefore, is neither a state of a Games to be increased or decreased, nor a static goal or target to be achieved. Sustainability is an ideal and a moving target. Visions of sustainability represent ideals that come from ethics and values we hold that are indeed non-quantifiable. Improvements in our understanding of the social and economic environment in which the Olympic Games take place affect the goal-setting approaches and interventions we choose for staging them. Thus, visions of environmental sustainability inevitably involve a process of social learning. This renders sustainability into a construction process aimed at creating value but with an unknown end point. It also affords centrality to local actors, as any meaningful vision of change in individuals, communities, and organizations produced by the Games has to be derived from local symbols, knowledge, and behaviors. The lack of agreement on the meaning of the principal constructs of the sustainability concept – needs and development – presents significant challenges to its governance as it requires a substantial capacity to predict the future and to handle uncertainty.

Governance as the fourth pillar of sustainability

There is a general consensus among scholars and politicians that environmental sustainability is based on three pillars concerned with ecological, economic, and social objectives (Dresner, 2003; Goodland, 1995; Meadowcroft, 2000). This model, often referred to as the “triple bottom line” or the “3Ps” (i.e., people, planet, profit), has more recently been complemented by a fourth pillar that arose out of concerns that by focusing on the environmental, economic, and social aspects of sustainability we might be missing something of great importance. The missing important element of environmental sustainability, according to Park, Conca, and Finger (2008), was “the almost total failure to grapple with the questions of governing functions and governing agents in the world’s increasing globalized political economy” (p. 6). The fourth pillar of sustainability has been variously described as democracy, governance, cultural-aesthetic, political-institutional, and religious-spiritual (Burford et al., 2013; Hawkes, 2001). The principal difference between government and governance is that the former implies formal structures ruling over people, whereas the latter highlights the increasingly important role of formal and informal arrangements in the political economy.

Kemp, Part, and Gibson (2005) argued that transparency and public engagement are key characteristics of decision-making for sustainability. The main reasons for public participation include an ethical rationale, which sees the public as the ultimate source of value within society that needs to be expressed in policy making, a political rationale suggesting that public involvement strengthens the legitimacy of decisions, and a knowledge rationale highlighting that citizens’ knowledge is as important as the knowledge of experts and politicians (Quental et al., 2011).

Sustainable governance exhibits four key features including policy integration, common objectives, criteria and rules, information, and incentives for practical implementation and programs for system innovation (Kemp et al., 2005). Policy integration is concerned with the coordination of government policies and the corresponding and complementary positions and initiatives of other governance actors. Policy integration across different public and non-governmental organizations cannot be achieved successfully without common objectives,

criteria, trade-off rules, and indicators. By themselves, sustainable policies and common objectives are insufficient if not complemented by means of spurring and guiding appropriate action. Immediate sustainable benefits can be obtained in a number of different ways by using existing technologies, but long-term sustainability requires ongoing system innovation to account for the changing contexts.

In summary, three key meanings of governance are commonly shared, although under different names (Jordan, 2008; Peters & Pierre, 1998; Rhodes, 2007; Treib, Bähr, & Falkner, 2007). These explain governance in terms of a political theory, describing a certain type of exchange between the state and society; a process of steering concerned with enhancing government's capacity by forging strategic organizational coalitions; and an empirical phenomenon concerning the deployment of specific policy instruments. Jordan (2008) also argued that sustainable development is "at root, a fundamental normative idea and a great deal of effort has been expended to trying to identify what governance changes are needed to put it into effect" (p. 25). These meanings of sustainable governance will be used to guide the analysis of London 2012.

Environmental sustainability and the Olympic Movement

The Olympic and Paralympic Games have a vast impact on the environment as they draw in one place over a short period significant amounts of people, equipment, apparel and facilities, all of which have an "ecological footprint" – an impact on the natural environment. Running the Games requires using energy and contributes to air pollution, greenhouse gas emissions, and waste generation, as well as to ozone layer depletion, habitat and biodiversity loss, soil erosion, and water pollution. The conflict between sport and nature was first seriously addressed in the early 1970s. An environmental initiative by the organizers of Munich 1972 Olympic Games invited all participating National Olympic Committees (NOCs) to plant a shrub from their country in the Olympic park and coined the slogan *certatio sana in natura sana* ("healthy competition in an intact environment"). These first ad hoc steps were gradually transformed by the IOC into a more coherent environmental policy and actions aimed at arresting the harmful influence of sport on the environment, particularly after the destructive impact on the natural environment of the 1992 Albertville Games. The IOC took part in the UN Conference on Environment and Development in Rio de Janeiro in 1992 and committed the Olympic Movement to the concept of sustainable development. Among other policies, the IOC developed a list of environmental requirements concerning the cities bidding to host the Olympic Games. These demand from the Organizing Committees of the Olympic Games (OCOG) more responsibility and accountability and bind them to cooperate with respective agencies to plan and implement environmentally sound projects.

Cantelon and Letters (2000) documented the making of the IOC environmental policy and argued that the IOC was pressured into developing an environmental policy but had little understanding of how to address this global issue. The template for the IOC environmental policy was set up by the Norwegian city of Lillehammer, which hosted the 1994 Olympic Winter Games. Drawing from local people's well-developed respect for nature, at the outset Lillehammer made environmental issues a priority and committed the bid to deliver sustainable Games, and have since become the global policy that all future OCOGs ought to follow.

In 1994 the United Nations Environment Programme (UNEP) formed an alliance with the Olympic Movement to provide leadership and encourage partnership in caring for the environment particularly in the field of sport. In 1995, in conjunction with UNEP, the IOC organized the First World Conference on Sport and the Environment in Lausanne and held additional conferences every two years until 2013, when the last in the series convened in Sochi. The conference addressed four major issues: governmental responsibility, duties of the Olympic

Movement, education and the environment, and sports industries' responsibility. A practical outcome of the conference was the launch of the "Eco-wave" movement by the Federation of the European Sporting Goods Industry (FESI). It introduced the ISO14000 ecological standards for businesses. Another important development was the setting up of the IOC Sport and Environment Commission in 1996, of which UNEP is a member advising on environment-related policy and working with bidding cities and Games organizers to refine the environmental component of their bids and operation. The 2015 United Nations Sustainable Development Summit further reinforced the collaboration between sport and the environment and officially inscribed sport in the post-2015 Sustainable Development Goals. However, there is no certainty that sport will be capable of delivering on its new responsibilities, as, for example, there are concerns that the 2015 Sport and the Environment global meeting is going to be the last one of this kind.

In 1999, the IOC changed its procedure for awarding an Olympic Games to a city, during the first phase of which applicant cities are required to answer a questionnaire in writing by providing an assessment of current environmental conditions in the city and the environmental impact of staging the Games in that city/region and relevant legislation. The IOC (2012) followed Agenda 21 with the "Sustainability Through Sport" sport-environment manual but it contains no reference to governance. Since sustainable development entails a process of social learning, in 2001, the IOC also introduced the Olympic Games Impact (OGI) that was "designed to evaluate the Games' legacy for the host nation and city against a raft of social, economic, cultural and environmental indicators hence providing an "evidence base" for measuring the positive societal consequences of the Games for its hosts" (MacRury & Poynter, 2009, p. 304). The OGI was first contractually incorporated into the planning requirements for the 2010 Vancouver Winter Olympics and the 2012 London Games. However, Karamichas' (2012, 2013) examination of the Games in Sydney, Athens, Beijing, and London found no causality between hosting the Olympics and improvements in environmental modernization capacity and attributed any developments in this regard to political changes.

A Games' environmental sustainability is contingent on the strategic approach of host cities. Hall (2012) suggested three such approaches to sustainability in the context of mega sport events, including (1) economic that "seeks to portray the sustainability of hosting mega/events primarily in economic terms" (p. 124); (2) balanced, seeking to "balance: economic impacts of mega/events with environmental and social ones" (p. 124) where these are supposedly given equal weight in system management; and (3) steady/state, where:

Sustainability is understood as being grounded in the constraints of natural capital/natural systems. It includes some aspects of sustained yield together with a more fundamental notion of environmental conservation (also referred to as degrowth). Event system is recognized as being dependent on natural capital.

(p. 124)

Sustainability was given further prominence by the Olympic Agenda 2020 and elevated to a key concept underpinning the Olympic Movement (IOC, 2014). Sustainable thinking is supposed to permeate the daily operations of the movement and appears in a number of recommendations concerning reducing the cost of bidding, encouraging maximum use of existing facilities, and leaving a lasting legacy, as well as daily corporate activities. These measures promote future host cities' plans that fit with what Essex and Chalkley (1998) described as a low-impact Olympic city that sought to keep expenditures to a minimum and did not build, or made only modest investments in, new sports facilities. It is also worth noting that sustainability has been perceived as a key Olympic value alongside sport, culture, education, and the environment

Table 31.1 Carbon footprint of Olympic and Paralympic Games by component

<i>ktCO₂e</i>	<i>Owned-ODA</i>	<i>Owned-LOCOG</i>	<i>Shared + Associated</i>	<i>Rio 2016</i>
Venues	1,728	0	0	730
Transportation infrastructure	161	1	429	800
Spectators	0	15	655	1,380
Operations	0	384	75	650
Total	1,889	400	1,159	3,560

Note. *ktCO₂e* = kilotons of carbon dioxide equivalent; ODA = Olympic Delivery Authority; LOCOG = London Organising Committee of the Olympic and Paralympic Games. Adapted from “London 2012 Carbon Footprint Study,” by LOCOG, 2010, p. 28, and “Carbon Footprint Management Report Rio 2016 Olympic and Paralympic Games,” by Rio 2016 Organising Committee for the Olympic and Paralympic Games, 2014, p. 1.

(Chatziefstathiou & DaCosta, 2015). Agenda 2020 recommendations could also be interpreted as an admission of the unsustainability of the Games’ model. The founder of the modern Olympics, Pierre de Coubertin, warned about Games’ excesses already in 1911:

It would be very unfortunate, if the often exaggerated expenses incurred for the most recent Olympiads, a sizeable part of which represented the construction of permanent buildings, which were moreover unnecessary – temporary structures would fully suffice, and the only consequence is to then encourage use of these permanent buildings by increasing the number of occasions to draw in the crowds – it would be very unfortunate if these expenses were to deter (small) countries from putting themselves forward to host the Olympic Games in the future.

The London Olympics were the first Games to measure their carbon footprint from bid win to closing ceremony, which was about 3.4 million tons of carbon dioxide equivalents (3.4MtCO₂e, or around 0.5 percent of annual UK emissions). Table 31.1 shows how this total is split between four broad categories, including venues, spectators, operations, and transport infrastructure, and provides comparative figures for Rio 2016, but caution needs to be exercised because different methodologies were used in these two cases.

Governance of environmental sustainability in the 2012 London Olympics

London 2012 has developed a comprehensive sustainability plan spanning five broad areas of climate change, waste, biodiversity, inclusion, and healthy living, each of which requires its own governance arrangements. Therefore, this section uses the three meanings of governance established earlier – an exchange between the state and society; a process of steering concerned with enhancing government’s capacity to act; and an empirical phenomenon concerning the deployment of specific policy instruments – to examine London’s environmental sustainability governance as opposed to engaging with the governance specifics in each area.

London’s vision for social, economic, and environmental sustainability was articulated in the *One Planet Living* concept, which promotes a positive vision of a world in which people are living happy, healthy lives, within the natural limits of the planet. It is based on a fair-share accounting model which determines what resources the world can naturally regenerate and sustain (London 2012, 2007). *One Planet Olympics* was the operationalization of the *One Planet*



Figure 31.1 Queen Elizabeth Olympic Park (née Olympic Park) in 2012 (“Olympic Park, London, 16 April 2012” by EG Focus is licensed under CC BY 2.0)

Living concept, in which 10 principles were designed to translate visions of sustainability into concrete programs and practical activities of all stakeholders in the context of the Games, its facilities, and its events (Figure 31.1). This proved a challenging prospect as, for example, one needs to consider how to ensure compliance of McDonald’s, one of the top Olympic sponsors responsible for running London’s volunteering program, when each of its restaurants sends 100 tons of waste to landfill each year (Eccleston, 2007).

The *One Planet Olympics* document and London 2012’s (2007) “Sustainability Plan” have framed sustainability as a construction process and a moving target: “sustainability itself is a rapidly evolving discipline; new methods and technologies are continually being developed” (p. 5). Notwithstanding the elusive character of this concept, London organizers were keen to stress that sustainability is not an “add on” and presented governance as a normative concept that permeates the thinking and practices of all institutions and individuals involved. The UK government reiterated its commitment to deliver a sustainable Games in its Olympic Action Plan (DCMS, 2008).

Governance as an exchange

Similar to the UK government’s justification for backing the London bid, which was framed as a classic example of state–society exchange – a massive investment of public funds in return for sustainable cultural, economic, and sporting legacy for the whole country, and a mandate for action – London 2012’s *Towards a One Planet Olympics* also made five substantial promises. These included:

- 1 zero waste policies extend across East London based on high recycling rates, and residual waste converted to compost and renewable energy;

- 2 increased market for recycled products;
- 3 training and job opportunities locally in (re)manufacturing;
- 4 local and sustainable materials supply chains maintained; and
- 5 the creation of a “green” business hub.

Delivering these promises was expected in return for substantial public and private investments and a commitment to sustainable philosophy and practices. All London 2012 commercial partners were required to adhere to specific sustainability policies and criteria relating to procurement, materials, and waste management, and ethical trading. London 2012 has made around 7,000 direct and around 75,000 sub-contracts worth £6 billion.

London has been able to achieve a substantial part of its environmental promises, but as the revisited version of *Towards a One Planet Olympics* (London 2012) made it clear, it failed to deliver on a number of scores. Some of the most notable failures include meeting the renewable energy targets, which has affected London’s carbon reduction strategy, ensuring compliance of many of its commercial partners and inclusion with regard to affordable accommodation and ticketing, the development of a green business hub, and healthy living.

London 2012 has also amplified a major criticism of the concept of sustainability concerning people’s ability to deal with uncertainty. Flybjerg and Stewart’s (2012) examination of the bid and final budgets of 38 Olympic Games between 1960 and 2012 noted an alarming average cost overrun of 178 percent in real terms that is significantly higher than in other types of megaprojects (e.g., transport projects cost overrun on average between 27 percent and 45 percent and in IT projects 27 percent). London has reversed the trend from the past seven Games towards lower cost overruns with a cost overrun of 133 percent compared to Nagano 1998 (58 percent), Sydney 2000 (108 percent), Salt Lake City 2002 (40 percent), Athens 2004 (97 percent), Torino 2006 (113 percent), Beijing 2008 (35 percent), and Vancouver 2010 (36 percent). London’s delivery on its environmental promises, therefore, ought to be viewed in the context of the fluidity of their cost.

Process of steering

The Olympic Games present a complex tapestry of organizations and right holders: the Games are owned by a transnational organization, the IOC, are supported financially by global commercial and broadcasting companies, rely heavily on the host country’s public-sector investments, and involve 28 international federations and NOCs from every single country in the world. Delivering an Olympic Games involves a range of stakeholders across different sectors and levels of government, which in the case of London numbered over 90 at the city level (Girginov, 2012a). Therefore, it is critically important to put in place sound structures and coordination mechanisms. The UK government established the steering framework for sustainability, first in *Our Promise for 2012* (DCMS, 2007) and then in its *Before, During and After* (DCMS, 2008) action plan, which offered a roadmap for implementing the six substantial promises. The plan delegated responsibilities for designing and implementing the legacy visions:

These promises provide a framework for organizations and individuals across the UK. We are inviting them to play their part in fulfilling the potential of the Games, and here set out the first steps we have taken to realize our legacy ambitions.

(DCMS, 2008, p. 3)

This statement is indicative of the preferred negotiation policy style when forging consensus in the relationship between the British government and society (Howlett & Ramesh, 1995).

The overall monitoring of London sustainability governance arrangements was assigned to the independent Commission for a Sustainable London 2012 (CSL), which was funded largely with public money. The CSL (2007) published its first *On Track for a Sustainable Legacy* report that provided a governance review focusing on the core processes, structures, and policies that have been put in place from the bid win and on those issues which were perceived by the CSL as of most priority at this stage in the program.

A fundamental aspects of sustainable development concerns the inclusion of civil societies in deliberative or participatory forms of decision making. This was made explicit by London 2012 (2009): "Sustainability is fundamentally about people and how we live; it is not simply a technical discipline" (p. 9). Getting on board all stakeholders even when the prestige of the nation and its ability to perform are at stake has always been challenging though. Sadd (2013) documented some 40 official London protest groups concerned with different aspects of sustainability. Several commentators have expressed concerns about the principles and outcomes of the steering process that has been put in place in making fundamental sustainability decisions across all five key themes. The lack of citizen participation and democratic accountability in decision-making in previous Olympics is well documented (Andranovich et al., 2001; Burbank et al., 2001). Cohen (2012) and Fussey, Coaffee, Armstrong, and Hobbs (2011) describe in detail LOCOG and the Olympic Delivery Authority's (ODA) tokenism in consulting local communities in East London where people's concerns about evictions, use of land and disturbing established communities, and providing affordable housing were largely ignored. Smith (2009) discussed the effect of unsymmetrical power relations between the government and big corporations and other players in framing the dominant discourse of what is sustainable and beneficial and for whom.

Raco (2015) criticized the proposed governance solution to sustainability for being private sector led and contract based that has converted "sustainability objectives into a series of definable, bounded and compartmentalized problems to be tackled through targeted interventions. Selected private sector expertise would be identified and mobilized within a powerful project management structure" (p. 127). Those contractual arrangements with the private sector came at a price of £700 million fee for overseeing the delivery of the 2012 Games' infrastructure. As Raco explained: "Rather than focusing on lofty aspirations and wider conceptual imaginations of sustainability, the objective was to establish clear, rational and output-centered practices that would make sustainability 'possible.' These would be embedded in concrete contractual compliance requirements" (p. 128).

Hayes and Horne's (2011) analysis of sustainability of the London Olympics raised similar concerns in relation to developing the environmental footprint methodology that was heavily reliant on the work of Best Foot Forward, a private consultancy company specializing in carbon accounting and sustainability. They explicated how the aspirational sustainability framework created at the bid stage was extended into a framework that developed into a sustainability policy and subsequent plan, agreed by the Olympic Board. At the same time, two main local campaigns' (i.e., MGS and NOGOE) concerns that the Olympic planning proposal was "inauthentic" were widely discounted. As Hayes and Horne (2011) put it:

For the latter, equestrian events should not be sited in Greenwich Park not just because of potential acid grassland erosion and the small size of the site, but because there is no tradition of equestrianism in the Borough, and because LOCOG is simply seeking a symbolic image of "heritage" for communicational purposes; for the former, the ODA is evicting a vibrant, diverse, rooted community in order to replace it with a sterile,

landscaped park and an ersatz projection of social cohesion (LOCOG's volunteering and "diversity" agendas).

(p. 757)

The authors argued that despite environmental technology advances, London 2012 offered only a hollowed-out form of sustainable development and that the development model of the Olympics remained predicated on the satisfaction of transnational investment flows, which excluded civic groups from having a say in the design of sustainable development.

Policy instruments in the governance of environmental sustainability

The use of specific policy instruments in the governance of London 2012 has been discussed in some detail elsewhere (Girginov, 2012b). Political regulation was further ensured by a raft of documents setting out environmental sustainability commitments and targets for the Games including: *Towards a One Planet Olympics*, an aspirational, but not binding, document co-authored with BioRegional and the World Wildlife Fund; London 2012 Sustainability Policy; and the London 2012 Sustainability Plan, setting out in more detail how the policy objectives will be achieved. These instruments fall into four main categories including coercive, voluntary, targeting, and framework regulation (Treib, Bähr, & Falkner, 2007) and entail a different level of compliance on the part of agencies involved. The rest of this section focuses specifically on the development of a policy instrument in the form of an event industry standard that uniquely combines the noted four categories. Before that, however, an important caveat is in order.

The Olympic Games represent a classic example of a large scale project with non-negotiable starting and finishing times and well-determined targets and where delivery is what really counts. A distinguishing feature of most projects is the separation of the realization of the task (i.e., staging the Games) from its environment, which in the event management business is referred to as "bracketing" (Girginov & Olsen, 2013). The main purpose of bracketing is to protect the project from its environment so it does not pose any significant threat to its implementation. Bracketing in the London Olympics has taken various forms, ranging from bespoke legislation to framework regulations, government ring-fencing of the Olympic budget, tax exemptions for all members of the Olympic family, exclusion zones, and downright coercion. In this sense, the use of Games bracketing as a policy instrument contradicts the very essence of environmental sustainability as it creates favorable conditions afforded only to the Olympics as a project of exceptional national and international significance that are not available to other projects. However, bracketing is not just a technical term, but also a discursive practice, the main role of which is to actively frame a meaning of the Games that would emphasize the social and political significance of certain themes and actions while silencing others.

In order to meet its promise to host truly sustainable Games, LOCOG worked with the British Standards Institute to develop BS8901, a specification for a Sustainability Management System for Events. It was further developed into an International Standard ISO20121, and LOCOG was the first organization to be certified for meeting the ISO20121 requirements just before the start of the Games. In June 2012, ISO20121 became the global sustainability standard for the event sector which is now being taken up by many event management companies and event locations in the UK and some 30 countries around the world.

What distinguishes ISO20121 from previous standards is that whereas the latter tended to narrowly focus on environmental issues, the former takes a holistic and strategic view of sustainability performance by encompassing the economic, social, and environmental pillars of

sustainability. The standard provides the framework needed to plan, measure, minimize, and eliminate the negative environmental, social, and economic impacts of an event while maximizing the benefits of events. ISO20121 is a voluntary code, which provides a framework regulating the behavior of event organizers and stakeholders by setting out specific measurable targets, which once accepted become compulsory and require compliance. As a policy instrument, ISO20121 represents a declared aspiration to develop others in the event industry and beyond, and it has become a formal requirement of the Olympic Host City Contract. In that, it has become a powerful instrument of cultural governance (Fairclough, 2000) concerned with shaping meaning and promoting specific discourses about how organizations should operate and how individuals should act. Shalani's (2013) study echoes this conclusion and found institutionalization of elements of sustainability in the Olympic Games with legitimation and mimetic processes at play.

Conclusion

This chapter has conceptualized sustainability as a social construction process predicated on learning and aimed at creating value but with an unknown end point, and highlighted the centrality of local actors. Sustainability has been defined as a contentious concept and the resultant lack of agreement on the meaning of its principal constructs – needs and development – and its implications for governance were highlighted.

The London Games organizers, including the ODA and LOCOG, have praised themselves for delivering an environmentally friendly event with 100 percent of Games operations waste diverted from landfill and 62 percent of that waste being reused, and further 99 percent of the waste from installing and decommissioning the Games venues being reused or recycled. The London OGI report also painted a positive picture of sustainability with a total score (out of 1) of 0.63 with average environmental indicators of 0.53, socio-cultural of 0.68, and economic of 0.61; no score was offered for governance (University of East London, 2015). As this chapter has demonstrated, behind the headline figures lays a more complex picture.

London organizers have made a deliberate attempt to institutionalize the governance of sustainability through a range of institutional arrangements and policies, and the compartmentalization of responsibilities and targets. Governance was framed as an exchange process where the UK government has promised to deliver a number of benefits for the whole country in return for a mandate for action and to spend significant amount of public money. Environmentalism, as Chatziefstathiou and Henry (2012) observed, has become a new Olympic value and a powerful discourse. Although Games organizers have largely fallen short of ensuring meaningful public participation in shaping environmental policy making, as a key element of sustainable development, they have nonetheless embarked on an ambitious environmental program codified in *The One Planet* document. Therefore, whose visions and needs of sustainability have been promoted remained a contentious issue, which partly explains why targets concerning inclusion and healthy living were not met. Human capacity to predict the future and to handle uncertainty were also challenged: key promises such as providing affordable housing, not diverting lottery money from grassroots sport, and giving equal voice to different groups were broken. One aspect of sustainable environmental governance that has been advanced is social learning designed to capture the intellectual capital on mass scale. The process of social learning was coordinated by the ODA through an online platform "Learning Legacy" to share the knowledge and lessons learned from the London 2012 construction project to raise the standards within the UK construction sector. Lessons from London have been taken on board by Sochi and Rio de Janeiro Games organizers, which promises to further enhance the governance of environmental sustainability of mega-events.

References

- Adranovich, G., Burbank, M., & Heying, C. (2001). Olympic cities: Lessons learned from mega events politics. *Urban Affairs*, 23, 113–131.
- Burbank, M., Adranovich, G., & Heying, C. (2001). *Olympic dreams: The impact of mega-events on local politics*. London: Lynne Rienner Publishers.
- Burford, G., Hoover, E., Velasco, I., Janoušková, S., Jimenez, A., Piggot, G., Podger, D., & Harder, M. (2013). Bringing the “missing pillar” into sustainable development goals: Towards intersubjective values-based indicators. *Sustainability*, 5, 3035–3059.
- Cantelon, H., & Letters, M. (2000). The making of the IOC environmental policy as the third dimension of the Olympic Movement. *International Review for the Sociology of Sport*, 35, 294–308.
- Chatziefstathiou, D., & DaCosta, L. (2015). Olympic idea nowadays: Major values approached by Olympic scholars and experts in voluntarily written essays. In B. Cerezuela, A. Miragaya, & D. Chatziefstathiou (Eds.), *Olympic idea nowadays: Perceptions and insights* (pp. 7–20). Barcelona: Universitat Autònoma de Barcelona.
- Chatziefstathiou, D., & Henry, I. (2012). *Discourses of Olympism: From the Sorbonne 1894 to London 2012*. Basingstoke: Palgrave Macmillan.
- Cohen, P. (2013). *On the wrong side of the track? East London and the post Olympics*. London: Lawrence & Wishart.
- CSL. (2007). *On track for a sustainable legacy*. London: CSL.
- Da Costa, L. (Ed.). (1992). *Environment and sport: An international overview*. Porto: University of Porto.
- DCMS. (2007). *Our promise for 2012: How the UK will benefit from the Olympic and Paralympic Games*. London: DCMS.
- DCMS. (2008). *Before, during and after: Making the most of the London 2012 Games*. London: DCMS.
- de Coubertin, P. (1911). *Pour l'honneur. Revue Olympique*, 59–62.
- Dresner, S. (2003). *The principles of sustainability*. London: Earthscan.
- Eccleston, P. (2007, September 18). McDonalds to use waste to generate power. *The Telegraph*. Retrieved from www.telegraph.co.uk/earth/main.jhtml?xml¼/earth/2007/09/18/eamac118.xml
- Essex, S., & Chalkley, B. (1998). Olympic Games: Catalyst of urban change. *Leisure Studies*, 17, 187–207.
- Fairclough, N. (2000). *New labour, new language?* London: Routledge.
- Flybjerg, B., & Stewart, A. (2012). *Olympic proportions: Cost and cost overrun at the Olympics 1960–2012*. Saïd Business School Working Papers. Oxford: Oxford University Press.
- Frey, M., Iraldo, F., & Melis, M. (2008). *The impact of wide-scale sport events on local development: An assessment of the XXth Torino Olympics through the sustainability report*. (Unpublished working paper). Università Commerciale Luigi Bocconi, Milan, Italy.
- Fussey, P., Coaffee, J., Armstrong, G., & Hobbs, D. (2011). *Securing and sustaining the Olympic City: Reconfiguring London for 2012 and beyond*. Aldershot: Ashgate.
- Girginov, V. (2012a). Governance of the London 2012 Olympic and Paralympic games. In V. Girginov (Ed.), *Handbook of the London 2012 Olympic & Paralympic games* (Vol. 2, pp. 130–145). London: Routledge.
- Girginov, V. (2012b). Governance of London 2012 Olympic sport legacy. *International Review for the Sociology of Sport*, 47, 1–16.
- Girginov, V., & Hills, L. (2008). The 2012 London Olympic Games and participation in sport: Understanding the link. *The International Journal of the History of Sport*, 25, 2091–2116.
- Girginov, V., & Hills, L. (2009). The political process of constructing a sustainable London Olympics sports development legacy. *International Journal of Sport Policy*, 1, 161–181.
- Girginov, V., & Olsen, N. (2013). LOCOG: A temporary organisation within a high-velocity environment. In V. Girginov (Ed.), *Handbook of the London 2012 Olympic & Paralympic Games* (Vol. 2, pp. 71–83). London: Routledge.
- Goodland, R. (1995). The concept of environmental sustainability. *Annual Review of Ecology and Systematics*, 26(3), 1–24.
- Gottlieb, R. S. (Ed.). (1996). *This sacred Earth: Religion, nature, environment*. New York, NY: Routledge.
- Hall, C. M. (2012). Sustainable mega-events: Beyond the myth of balanced approaches to mega-event sustainability. *Event & Management*, 16, 119–131.

- Haq, M. ul. (1995). *Reflections on human development*. Oxford: Oxford University Press.
- Hawkes, J. (2001). *The fourth pillar of sustainability: Culture's essential role in public planning*. Victoria: Common Ground Publishing Pty Ltd.
- Hayes, G., & Horne, J. (2011). Sustainable development, shock and awe? London 2012 and civil society. *Sociology*, 45, 749–764.
- Howlett, M., & Ramesh, M. (1995). *Studying public policy: Policy cycles and policy subsystems*. Oxford: Oxford University Press.
- IOC. (1999). *Olympic Movement's agenda 21: Sport for sustainable development*. Lausanne: IOC.
- IOC. (2007). *Olympic charter*. Lausanne: IOC.
- IOC. (2012). *Sustainability through sport*. Lausanne: IOC.
- IOC. (2014). *Olympic agenda: 20+20 recommendations*. Lausanne: IOC.
- Jordan, A. (2008). The governance of sustainable development: Taking stock and looking forwards. *Environment and Planning C: Government and Policy*, 26, 17–33.
- Kallio, T., Nordgerg, P., & Ahonen, A. (2007, July). Rationalizing sustainable development – a critical treatise. *Sustainable Development*, 15, 41–51.
- Karamichas, J. (2012). Olympic games as an opportunity for the ecological modernisation of the host nation: The cases of Sydney 2000 and Athens 2004. In G. Hayes & J. Karamichas (Eds.), *Olympic games, mega-events and civil societies* (pp. 151–171). Basingstoke: Palgrave Macmillan.
- Karamichas, J. (2013). *The Olympic games and the environment*. Basingstoke: Palgrave Macmillan.
- Kemp, R., Parto, S., & Gibson, R. (2005). Governance for sustainable development: Moving from theory to practice. *International Journal of Sustainable Development*, 8(1/2), 12–30.
- London 2012. (2007). *Towards a one planet Olympics*. London: London 2012.
- London 2012. (2009). *Towards a one planet 2012* (2nd ed.). London: London 2012.
- London 2012. (2012). *London 2012 post-games sustainability report: A legacy of change*. London: London 2012.
- MacRury, I., & Poynter, G. (2009). Olympic cities and social change. In G. Poynter & I. MacRury (Eds.), *Olympic cities: 2012 and the remaking of London* (pp. 203–226). Farnham, UK: Ashgate.
- May, V. (1995). Environmental impact of the Winter Olympic Games. *Tourism Management*, 16, 269–275.
- McNeill, D. (2007). “Human development”: The power of the idea. *Journal of Human Development*, 8, 5–22.
- Meadowcroft, J. (2000). Sustainable development: A new(ish) idea for a new century? *Political Studies*, 48, 370–387.
- Mebratu, D. (1998). Sustainability and sustainable development: Historical and conceptual review. *Environmental Impact Assessment Review*, 18, 493–520.
- Mol, A. (2010) Sustainability as global attractor: The greening of the 2008 Beijing Olympics. *Global Networks*, 10, 510–528.
- Park, J., Conca, K., & Finger, M. (2008). The death of Rio environmentalism. In J. Park, K. Conca, & M. Finger (Eds.), *The crisis of global environmental governance: Towards a new political economy of sustainability* (pp. 1–13). London: Routledge.
- Peters, G., & Pierre, J. (1998). Governance without government? Rethinking public administration. *Journal of Administration Research and Theory*, 8, 223–243.
- Quental, N., Lourenço, J. M., & da Silva, F. N. (2011). Sustainable development policy: Goals, targets and political cycles. *Sustainable Development*, 19, 15–29.
- Raco, M. (2015). Sustainable city-building and the new politics of the possible: Reflections on the governance of the London Olympics 2012. *Area*, 47, 124–131.
- Rhodes, A. (2007). Understanding governance: Ten years on. *Organization Studies*, 28, 1243–1264.
- Rio 2016 Organising Committee for the Olympic and Paralympic Games. (2014). *Carbon footprint management report Rio 2016 Olympic and Paralympic Games*. Retrieved from www.rio2016.com/sustentabilidade/wp-content/uploads/2015/08/Relatorio_de_Gestao_da_Pegada_de_Carbono_dos_Jogos_Rio2016_ING_2015_v2.pdf
- Sadd, D. (2013). Protesting the games. In V. Girginov (Ed.), *Handbook of the London 2012 Olympic & Paralympic games* (Vol. 2, pp. 227–238). London: Routledge.
- Schmied, M., Hochfield, C., Stahl, H., Roth, R., Armbruster, F., Turk, S., & Fiedl, S. (2007). *Green champions in sport and environment: Guide to environmentally-sound large sporting events*. Berlin: Federal Ministry for the Environment, Nature conservation and Nuclear Safety.

- Schumacher, E. F. (1989). *Small is beautiful*. London: Harper Perennial.
- Shalini, S. (2013). Green Olympics, green legacies? An exploration of the environmental legacies of the Olympic Games. *International Review for the Sociology of Sport*, 48, 485–504.
- Smith, A. (2009). Theorising the relationship between major sport events and social sustainability. *Journal of Sport & Tourism*, 14, 109–120.
- Trieb, O., Bähr, H., & Falkner, G. (2007). Modes of governance: Towards a conceptual clarification. *Journal of European Public Policy*, 14, 1–20.
- University of East London. (2015). *Olympic Games impact study – London 2012 post-games report*. Retrieved from www.uel.ac.uk/geo-information/London_OGI3/documents/PostGames_OGI_Report.pdf

LAW AND NORMS IN SUSTAINABILITY DEVELOPMENTS IN THE MAJOR AMERICAN SPORTS LEAGUES

Matthew T. Bodie and Lucas D. Jackson

In 2003, the Philadelphia Eagles consulted with the National Resources Defense Council (NRDC) for assistance in developing a greening program for their newly constructed Lincoln Financial Field (MacMillan, 2016). The two organizations formed a partnership designed to use the NRDC's environmental expertise in creating a signature sports stadium in one of the nation's largest cities. The success of this partnership could be considered a watershed moment in the sports world. Once the NRDC saw the success and potential public platform of this partnership, they began to aggressively reach out to other teams, leagues, and venues. This event also led to the foundation of the Green Sports Alliance (GSA), a partnership between the NRDC and various sport leagues, teams, and venues all dedicated to contributing to a greener world. The GSA's membership has grown to currently include 175 teams, 184 different venues, and 15 different leagues (Green Sports Alliance, 2016). After the 2003 partnership, different sports teams started expressing interest in obtaining a Leadership in Energy and Environmental Design (LEED) certification. Between 2008 and 2012, 15 different sports venues received LEED certifications (NRDC Greening Advisor, n.d.). The NRDC has also gone on to start "The NRDC Sports Project," and in 2010 every major American sports league distributed the project's informational materials on bringing solar power to stadiums and league members (Macmillan, 2016). The desirability of LEED certification, the influence of the GSA, and the growth of NRDC are all byproducts, whether directly or indirectly, of that original partnership.

The "greening" of professional sports in the United States offers tangible evidence that private companies will respond to sustainability concerns even when such responses are costly. Sports teams are not naturally green enterprises, and their fans may not seem to be particularly moved by sustainability issues. Thus, the breadth and depth of participation by the sports industry in green initiatives are impressive. Moreover, the law has largely not been the motivating factor behind these sustainability developments. Although federal, state, and local laws do form a backdrop of legal compliance for the sports leagues and their teams, most of the initiatives described herein go beyond what the law requires. Instead, industry metrics such as LEED certification are providing the targets for which teams and leagues are aiming. As a result, business practice is outpacing the law and may provide guideposts as we seek to develop an ever more sustainable future.

Legal background

Federal law imposes certain sets of minimum requirements on large construction projects such as sports stadiums and practice facilities. Statutes such as the Clean Air Act (42 U.S.C. §§ 7401–7642), the Clean Water Act (33 U.S.C. §§ 1251–1387), and the National Environmental Policy Act (NEPA; 42 U.S.C. §§ 4321–4347) regulate the use of such facilities. The Environmental Protection Agency (EPA) has gone beyond the strict requirements of the law to promote higher levels of environmental protection and sustainability in large, high-profile projects, including sports stadiums. In one notable example, the EPA formed a partnership with the New Meadowlands Stadium Company to set forth environmentally friendly parameters for the construction of MetLife Stadium (Memorandum of Understanding, 2009). The memorandum of understanding (MOU) between the EPA and the stadium company set forth a series of general principles and specific targets, such as lowering emissions from construction vehicles, monitoring air quality during construction, using certain targeted amounts of post-consumer recyclables, and conserving an estimated 11 million gallons of water a year (above the then-existing Giants Stadium). Although the MOU was largely voluntary, and either party could withdraw at any time, it provided a specific framework through which the EPA could work with the stadium company to follow a set of best practices. The EPA has issued an annual review of the stadium's compliance through 2015 (EPA, 2015). A similar, although more limited, memorandum of understanding was reached between the EPA and the Queens Ballpark Stadium Group, LLC, regarding the construction of Citi Field, home of the Mets (Memorandum of Understanding, 2008). The Colorado Rockies developed a specific plan to address storm water issues in complying with the Clean Water Act (Colorado Rockies, n.d.).

Similarly, state environmental protection acts (SEPAs) apply to sports stadiums and other facilities in ways that may require a higher level of compliance. Many states have environmental policy acts similar to NEPA that require overall compliance programs and evaluations of planned projects. However, these SEPAs do not generally have onerous environmental regulations, instead requiring simply a plan with significant deference afforded to the plan after the fact. Moreover, legislatures in states such as California have amended or waived existing statutory requirements for certain stadium projects (Diaz, 2013). Some local governments go farther in promoting the use of sustainable practices, such as utilizing the LEED Green Building Rating System (Porteshawver, 2009). Cities such as Boston, Chicago, San Francisco, and Seattle have significant new sustainable building requirements that would affect any future sports construction in those cities. The Washington Nationals built the first certified “green stadium” under Washington, DC's Green Building Act of 2006, which required new construction to be LEED certified (D.C. Code § 6–1451.11, 2006; Porteshawver, 2009).

National Football League

Several teams in the National Football League (NFL) have taken important steps towards improving the sustainability of their businesses. Perhaps the most visible physical presence of the NFL is the stadiums. These colossal structures require massive amounts of energy simply to sustain operation. There are also the emissions costs of commuters, the production of waste and trash, and water usage to consider. All of these costs skyrocket during a big event like the Super Bowl. What are the owners of these stadiums doing about the environment?

While many stadiums now employ simple environmentally friendly methods such as LED lights or paperless tickets, the Eagles were one of the initial pioneers into the partnership between big sports and sustainability. In preparation for the 2003 opening of the new stadium, Lincoln

Financial Field, the team reached out to the NRDC to ask for assistance in setting up a greening policy to reduce the stadium's carbon footprint (MacMillan, 2016). Today, the stadium boasts an impressive list of sustainability successes. The highest profile example is most likely the 14 wind turbines at one end of the field and thousands of solar panels built into the stadium's exterior (Belson, 2010). These features are not only highly visible, but they actually generate up to 30 percent of the stadium's total energy needs. Some of the Eagles' other sustainability actions also include purchasing all of the stadium's remaining energy needs from offsite renewable energy sources; planting over 4,000 trees within Neshaminy State Park to fully set off the teams annual carbon dioxide emissions from jet travel; utilizing recycling and composting programs to accomplish a 99.8 percent waste diversion rate; converting used fryer oil into the biodiesel fuel used in the stadiums maintenance vehicles; and conserving 21 percent of the stadium's annual water usage through improved monitoring, management, and infrastructure (Intersector Project, 2014).

The focus on sustainability in the NFL has not been contained to the Eagles. The new San Francisco 49ers' stadium was the first new NFL stadium to receive a LEED Gold rating (Levi's Stadium, 2015). (LEED bases its certification on sustainable sites, water efficiency, energy and atmosphere, material and resources, indoor environmental quality, innovation, and regional priority.) Seventy-five percent of the construction materials were recycled, LED lighting and solar panels are utilized, and it was placed in close proximity to public transit in an effort to cut down on emissions among other features. The most unique feature of the stadium is most likely the 27,000-square-foot "living roof" made up of native plants.

The focus on sustainability in stadium design is perhaps best demonstrated by the new stadium of the Atlanta Falcons, set to open in 2017 (Harder, n.d.). Named Mercedes-Benz Stadium, it is expected to be the first professional football stadium to receive a LEED Platinum certification. The structure will have many of the now commonplace features such as nearby public transit, solar panels, electric vehicle charging stations, high-efficiency water fixtures, and extensive use of LED screens and lighting. However, some original large-scale ideas are in the works as well. One example is the plan to have onsite food-production. Different edible landscaping such as apples, figs, and blueberries will be available to all guests. There will also be a nearby urban garden that will supply food to the full-time staff of more than 200 people. The stadium will also house a rainwater reclamation system for irrigation (Arnold, 2016). The amount of emphasis put on sustainability in the design of newest NFL stadium is demonstrative of the paradigm shift taking place in the world of North American Sports.

The NFL itself has taken criticism from environmental activists for failing to enforce any uniform environmental standards among its teams. Whereas the Eagles partnered with NRDC in 2003, the NFL did not officially partner with the NRDC as an environmental advisor until 2008 (Henly, 2012). However, the league has taken some substantial steps worthy of recognition. Most notably, the NFL's Commissioner's Office has established a greening policy that looks to offset the environmental impact of its largest events, such as the Super Bowl (NFL, 2011). The five stated initiatives of the policy are solid waste management, material reuse, prepared food recovery, sports equipment and book donations, and greenhouse gas reduction. An interesting facet of the NFL's greener aspirations is the focus on offsetting the energy usage and environmental impact of its massive events by investment in other environmental arenas, as opposed to actually reducing the direct effect of these events in and of themselves (Gallucci, 2015).

A primary example of the NFL's practice of offsetting the environmental impact of its events is the mass purchasing of renewable energy credits (REC) from clean utility providers located in the communities which host the Super Bowl. For example, the 2012 Super Bowl in Indianapolis used approximately 15,000 megawatt-hours of electricity. (Gallucci, 2015). In an effort to counteract this consumption, the NFL purchased an equal number of RECs from the local utility

Green Mountain Energy. In addition to renewable energy credits, optional “carbon offsets” can be purchased. Instead of purchasing energy that is then put back into the power grid, carbon offsets invest in emissions-reducing projects in other parts of the country or world. The 2013 Super Bowl in New Orleans resulted in approximately 3.8 million pounds of carbon dioxide emissions. (Gallucci, 2015). The city’s Super Bowl host committee worked with the local utility Energy to purchase carbon offsets to counteract the Super Bowl’s direct environmental impact. The NFL has also placed an emphasis on planting trees. In preparation for the 2008 Super Bowl in Phoenix, Arizona, the NFL amassed volunteers to plant thousands of trees in areas that had previously been devastated by widespread wildfire (Newhauser, 2007). In 2014, an effort was coordinated to plant over 20,000 trees in preparation for the Super Bowl in the MetLife Stadium in New Jersey (Gallucci, 2015).

Because the most visible presence of the NFL is the sight of the massive stadiums in which games are played, perhaps much of the NFL’s criticism comes from sources that fail to realize that the NFL itself, like the other leagues, does not own the individual stadiums. Those belong to private owners or local governments. However, the NFL’s actions are not limited only to offsetting procedures. The NFL’s own corporate headquarters in New York boasts a LEED Gold certification, the second highest certification available.

Major League Baseball

After seeing the success its organization had with the Eagles, the NRDC saw opportunity in other aspects of the sporting world. In 2005, Bud Selig, the commissioner of baseball, agreed the Major League Baseball (MLB) would partner with NRDC (Hershkowitz, 2015). This was the first league-wide greening collaboration (Henly, 2012).

MLB’s approach to environmental conservation has been similar to the approach by the NFL. The league has not imposed any mandatory requirements on the teams, but has issued guidelines and strives to operate its personal headquarters in a greener fashion. Additionally, the MLB was also the first to introduce, in partnership with the NRDC, a league-wide greening program. This program was initially known as “Commissioner’s Initiative on Sustainability,” but is now known as the MLB Greening Program (Hershkowitz, 2015). The program was, in part, the idea of MLB commissioner Bud Selig, and it aimed to enhance and coordinate the efforts of the numerous teams who already had individual greening operations. As a feature of this program, NRDC has developed the “Greening Advisor” (MacMillan, 2016). It is a multidimensional plan that can be downloaded from the NRDC website and offers individualized plans to all 30 teams. It includes recommendations on ways that the teams can capitalize on everything from stadium operations to fan interaction, and in 2008 the Greening Advisor won the U.S. EPA’s Environmental Merit award (Huggins, 2014). The MLB was the first league to distribute environmental advice and measuring tools to all stadium operators, to use public service announcements to educate fans, to utilize solar panels in its stadiums, and to green its all-star and championship games (Hershkowitz, 2015). Additionally, Bud Selig was recognized by the GSA in 2012 with the first Environmental Leadership Award for the influential role he has played in making environmental sustainability a priority in major league sports.

As with the NFL, a high-profile way to have a practical environmental effect in the MLB is the operation of the large stadiums. Many teams have taken steps to reduce the carbon footprint of their stadiums. Some of the easiest ways teams make their stadiums more environmentally efficient include the use of LED lights, reductions in water use, recycling, moving to paperless operations and tickets, and solid waste reduction and diversion. However, there are teams that are exemplifying the new emphasis on sustainability in the sporting world.

The Minnesota Twins are receiving a lot of attention for their stadium features and green-ing programs. Target Field, which opened in 2010, received a LEED Silver certification for new construction (Harder, n.d.). After a year of continued efforts, the Twins applied for, and received, a LEED Silver certification for its existing building. This made it the first ballpark to hold multiple LEED certifications (Minnesota Twins, 2011). This could be due, in part, to the emphasis the Twins franchise CEO Jim Pohlad specifically put on LEED certification. During the construction process, Pohlad set aside an extra \$2 million for LEED features (Brown & Campbell, 2010). The location and construction processes of Target Field were based largely on the environmental effects. The location where the stadium was built originally contained contaminated soil, but the site was treated through brownfield remediation so that it could be repurposed for safe building (NRDC, n.d.-b). It was also selected because of its position above an underground series of cisterns used to gather rainwater from a seven-acre area that was then filtered, disinfected, and used to clean the stadium and to water the field instead of using water from the Minneapolis public water system (Grant, Jr., 2014). The location is conveniently close to local public transit and the stadium was built using locally sourced materials, 70 percent of which were recycled or repurposed.

The features contained in the stadium include dual-flush toilets, low-flush urinals, and a rain water treatment system (Kaelin, 2016). Target Field is located next to Hennepin Energy Recovery Center (HERC) which heats the stadium with waste energy. Additionally, the stadium has impressive composting and recycling programs that allow it to attain an impressive 90 percent waste diversion rate. The waste that remains is sent to the HERC and burned for fuel.

Another baseball club that has put the spotlight on the environment is the Seattle Mariners. The Mariners were one of the original founding member teams of the GSA and have striven to have a more positive environmental impact ever since (Seattle Mariners, n.d.). In 2012, Safeco Field's waste diversion rate (the amount of waste diverted from landfills) was 12 percent. By 2014, that number had increased to 85 percent. Safeco Field has an extensive solar panel display atop the sky bridge connecting the stadium to the garage. This array generates 40,000 kilowatt hours of power annually which is fed directly into the stadium's power distribution grid. Four electric vehicle charging stations are supplied outside of the stadium. The Mariners' concessions partner, Centerplate, has donated over 40 tons of food to food pantries and feeding programs since the donation program began in 2011. Last season, 2.4 million pounds of organic or recyclable materials were composted or recycled. In addition to their stadium, the Mariners' headquarters in Peoria, Arizona, holds a LEED Gold rating. One of the primary features of the facility is a huge solar panel array that supplies over half of the building's annual energy needs.

The league is rife with teams who are making structural improvements and physical changes to stadiums and headquarters, but perhaps another metric by which to measure the change of the environmental mindset in the MLB is to look at the recognition Earth Day now commands as a holiday in the world of baseball. Although traditional holidays receive particular recognition and pomp in the baseball world – Jackie Robinson Day, Independence Day, and Veterans Day – Earth Day appears to have been adopted into the fold. On Earth Day in 2008, the Seattle Mariners became the first MLB club to host a completely carbon-neutral game through the purchase of offsets (Seattle Mariners, 2008). This trend has caught on and been repeated by various other ball clubs. Players from the Cincinnati Reds have hosted an annual Earth Day recycling drive that provides the fans and local community a spot to come and recycle old electronics (Cincinnati Reds, 2010). On Earth Day in 2012 the Oakland A's gave out 10,000 redwood seedlings to fans before the game began (Mendocino Redwood, 2012). The promotions around Earth Day have only continued to increase in popularity and the partnership between MLB and environmentally conscious ideals is strengthening in equal measure. The St. Louis Cardinals celebrate an annual

“Green Week,” in which they promote events both inside and outside of the stadium to educate fans as well as projects focused on having a direct effect, such as recycling drives (Newman, 2013).

National Basketball Association

The National Basketball Association (NBA) has joined the ranks of sports leagues among the Green Sports Alliance. The league’s growing focus on sustainability is evident in its annual “Green Week.” During this event, the NBA focuses its efforts entirely on educating its large viewing audience on the importance of living environmentally consciously (Naokarni, 2015). The league also utilizes less obvious tactics during its Green Week. For example, in 2010, players wore socks made from 45 percent organic cotton during games (Brown & Campbell, 2010). Beyond environmental education, the league has also previously hosted electronic recycling drives and pledged to plant a tree for Arbor Day every time the hashtag #NBAGreen was used on social media or a three-pointer was scored during a game. In 2013, the NBA pledged to offset 10 million pounds of carbon dioxide emissions (Lyons Hardcastle, 2013). Similar to the “Greening Advisor” program instituted by the MLB, the NBA partnered with the NRDC and Renewable Choice Energy to create “Mosaic” (NBA, 2013). Mosaic operates as an online tool that allows all NBA teams to track and analyze cost-saving measures they could implement while trying to reduce their carbon footprint.

As with the other big North American sports leagues, a lot of the most notable action by individual teams involves their arenas. The NBA currently has the most LEED certified venues of any sport. In 2009, American Airlines Arena, home of the Miami Heat, received LEED Gold certification, and in 2015, it became the first sports venue to receive Gold recertification (NBA, 2015). Over 63 percent the stadium’s cleaning supplies meet LEED criteria. Over 85 percent of the arena’s ongoing consumable material – office supplies, toner, calendars – meet LEED’s suggested environmentally sustainable criteria. The result saves hundreds of trees, thousands of gallons of water, and hundreds of hours of electricity. Additionally, it prevents hundreds of pounds of air pollution. In order to protect the local water table, the exterior of the arena is maintained using chemically free methods (NBA, 2015). In the 2013 season, the team was able to divert 330,810 pounds of waste from the landfill thanks to aggressive recycling and composting programs.

The Orlando Magic’s stadium, Amway Center, is also LEED Gold certified. It features high-efficiency heating and cooling systems, ultra-low-flow toilets, a reflective roof, bicycle racks and onsite showers to accommodate bicycling employees, systems to treat storm runoff before it can pollute nearby lakes, and recycling bins for fans (Amway Center, n.d.). The water conservation methods allow the stadium to save 1.3 million gallons annually. Approximately 83 percent of the steel, wood, and concrete construction waste was recycled as opposed to being sent to a landfill, and the adjacent GEICO garage received a LEED Gold certification.

In 2009, The Portland Trail Blazers were able to attain a LEED Gold certification at their arena as well (NBA, n.d.). The Moda Center has been able to divert 800 tons of waste from landfills through efficient recycling and partner with local utilities to purchase 100 percent renewable energy programs. The Trail Blazers have shown the proximity to public transit is an effective tactic. On average, 30 percent of the attendees arrive either through public transport or alternative private transport, such as bicycles.

National Hockey League

The National Hockey League (NHL) teamed up with the NRDC in 2012 to establish a league-wide greening program (Henly, 2012). Despite this late arrival, the NHL has quickly followed

suit and taken examples from its predecessor leagues. In March 2016, the league held its first Green Week, similar to that of the NBA, in which it announced it restored 7.5 million gallons of water to the Colorado River (Rosen, 2016). In a league-sponsored promotion titled “Gallons for Goals,” the NHL has pledged to restore 1,000 gallons of water for every regular season goal scored to a critically low-leveled river (NHL, 2012). In 2016, this pledge amounted to 6,565,000 gallons of water restored. Comparable to the MLB and NFL, the NHL has begun offsetting the carbon footprint by partnering with the host cities of its biggest events (NHL, 2016). At the 2016 NHL Combine, the league partnered with the Buffalo Sabres Green Team and donated 30 trees per-club that had made a commitment to environmental sustainability. The mature trees were then planted in a local underserved community. Additionally, all 30 NHL teams are members of the GSA. The NHL is the 21st largest user of green power in the United States and in 2015 received the Green Power Award from the U.S. EPA. Although the NHL might not have accomplished as much as the other leagues as of yet, its rapid foray into sustainability is indicative of its ardent desire to close the remaining gap.

The desire of the NHL to become as big of an environmental player as the other big sports leagues is echoed by its teams. In 2007, the Montreal Canadiens unveiled a new program titled “The Goal Is Green” (Montreal Canadiens, 2015). The point of this program is to make the Canadiens a leader of environmentally conscious management among all of the professional sports franchises. One of the first initiatives of this program was to take a comprehensive look at the Bell Centre operations and figure out where they could improve their green performance and then act accordingly. The efforts paid off, and the Bell Centre now holds three separate prestigious environmental certifications, consisting of LEED Silver certification for existing building, ICI ON RECYCLE (requiring recycling and composting of 80 percent of residual materials), and a RECYC-QUEBEC. On average, the stadium composts and recycles 860 tons of materials annually (NRDC, n.d.-a). There were also significant physical changes made to Bell Centre. Over 250 bathrooms were upgraded to use water more efficiently, leading to a 20 percent reduction. Additionally, the arena added priority parking for hybrid vehicles, eliminated gas emissions from maintenance equipment, and installed systems to monitor and control temperature and ventilation systems in real time.

The first NHL arena to achieve a LEED gold certification was PPG Paints Arena, the home of the Pittsburgh Penguins (NHL, 2010). The site of the stadium was selected in part because of the proximity to public transit (Green Building Alliance, n.d.). The designs have also included measures to reduce the heat island effect, a term used to describe the difference in temperature between a built-up, populated urban area, and a nearby rural area (EPA, n.d.). In the evening, these temperature differences can rise as high as 22 °F, causing spikes in energy consumption, emissions, and even heat-related illness and mortality (EPA, n.d.). To reduce heat absorption associated with heat island effect, the arena has a highly reflective roof and utilizes a parking garage instead of a parking lot. The plumbing fixtures use 40 percent less water annually compared to other conventional systems. During construction process, aggressive recycling measures allowed the construction to operate with an average of 90 percent diversion rate.

National Association for Stock Car Auto Racing (NASCAR)

Given the nature of its sport, one might expect stock car racing to have little interest in sustainability efforts. However, the National Association for Stock Car Auto Racing (NASCAR) has undertaken significant initiatives to make its sport more sustainable. (Bodie, 2011). In 2008, NASCAR hired Mike Lynch as its new managing director of NASCAR Green Innovation (NASCAR, 2008). NASCAR’s goal for its Green Innovation program was to “lay out a

comprehensive green strategy across all the activities of the sport” and “to have substantial and meaningful reduction in the environmental impact of the sport, while also being initiatives that our fans would resonate to in the right way” (Wright, 2011, p. 2). Perhaps the most significant green initiative is the sport’s use of a new, more environmentally friendly fuel: a 15 percent ethanol blend made with American-grown corn (Loveday, 2010). NASCAR’s move to ethanol fuel coincided with a new partnership with U.S. ethanol producers as a whole. Right around the same time as NASCAR’s announcements, the EPA announced that it would waive its restrictions on the use of E15 fuels, opening the door for greater consumer and business use of the fuel (Blanco, 2010).

In 2009, NASCAR announced a new program entitled “NASCAR Green Clean Air.” In an attempt to reduce the environmental footprint of the sport and raise awareness of conservation among its fans, NASCAR pledged to plant 10 trees for every green flag dropped during participating Sprint Cup Series events (NASCAR, 2009). The number of trees was calibrated to mitigate 100 percent of the carbon emissions produced by the race cars competing in each race. Recycling is also a big part of NASCAR’s sustainability efforts. The company has partnered with its tracks as well as with Coca-Cola Recycling to process over 80 tons of waste and 2.5 million containers in 2009 (NASCAR, 2010). In 2010, Coors Light, Office Depot, and UPS joined in to expand the program to include grandstands, concourses, suites, garages, and campgrounds. These recent efforts join longstanding recycling programs for tires (with Goodyear) as well as oil, brake fluid, and other solvents (as managed by Safety-Kleen) (Pockrass, 2010).

One of the biggest sustainable stock car efforts comes not from NASCAR itself, but from one of its partners in the sport. Pocono Raceway, an independently owned track, has installed a 25-acre, three-megawatt solar farm (Bodie, 2011). The power generated by the farm is sufficient not only for the track itself, but also for 1,000 nearby homes. One NASCAR racing team has also taken up the sustainability mantle. In 2009, the Hall of Fame Racing team joined up with JuicedHybrid.com, a supplier of accessories for hybrid cars and trucks, to offset the carbon footprint for the Number 96 car (Bodie, 2011). Both JuicedHybrid.com and Ask.com, the car’s primary sponsor, purchased carbon credits sufficient to offset the carbon emissions for the year.

Because NASCAR is a privately held company, it is not eligible for listing on the Dow Jones Sustainability Index or other green- or CSR-related investment sites. However, as reflected in its initiatives as well as its rhetoric, NASCAR wants to be seen as a green company and green industry. This concern for sustainability is reflected in its fans. A recent survey found that 77 percent of NASCAR fans believe in a personal obligation to be environmentally responsible; 65 percent agree that companies should help consumers become more environmentally responsible; more than 80 percent of NASCAR households recycle; and approximately 40 percent use energy efficient light bulbs (more than double the amount just five years earlier) (DeFreitas, 2010).

Conclusion

There is a clear merging of major North American sports leagues and new environmentally conscious business and technology practices. These goliaths of American business and entertainment have shown that they are willing to invest heavily in a greener game. The focus on sustainability has spread from one league to another and is currently a staple in every major league, as well as many of the smaller leagues below the professional level. This could potentially be an effect of the growing public acceptance of a reality of climate change, or, perhaps the public acceptance is being brought about, in part, by the light the leagues’ actions have shown on the climate change issue. According to the NRDC, 13 percent of Americans actively follow developments in science, but almost 71 percent of them follow sports (MacMillan, 2016).

Thus far, the story of sustainability in sport has been one of private partnerships. Federal, state, and local governments have, at times, worked with sports teams and leagues to ensure compliance with the laws and best practices in construction and waste management. But the sustainability initiatives described in this chapter largely exceed the required legal minimums. The narrow role of the law here is both heartening and concerning. The legally voluntary efforts on behalf of the planet bode well for the private sector's investment in a sustainable future. However, economic pressures or significant changes in consumer attitudes could lead many of these initiatives to dry up and disappear.

References

- Amway Center. (n.d.). *LEED Gold certification*. Retrieved from www.amwaycenter.com/venue-information/leed-certification
- Arnold, N. (2016, December 7). *Atlanta Falcons tout Mercedes-Benz Stadium's environmental features*. Retrieved from www.pslsource.com/blog/nfl/atlanta_falcons_tout_mercedes_benz_stadiums_environmental_features
- Belson, K. (2010, November 17). For Eagles, a winning mix of wind, biodiesel and solar. *New York Times*. Retrieved from www.nytimes.com/2010/11/18/sports/football/18stadium.html
- Blanco, S. (2010, October 13). EPA says E15 is ready for prime time – and your new-ish car. *Autoblog Green*. Retrieved from <http://green.autoblog.com/2010/10/13/epa-says-e15-is-ready-for-prime-time-and-your-new-ish-car/>
- Bodie, M. (2011). NASCAR Green: The problem of sustainability in corporations and corporate law. *Wake Forest Law Review*, 46, 491–522.
- Brown, M., & Campbell, D. (2010, July 23). Go green: Sports world picks up environmental pace. *My San Antonio*. Retrieved from www.mysanantonio.com/news/environment/article/Go-green-Sports-world-picks-up-environmental-pace-781994.php
- Cincinnati Reds. (2010, April 21). *Reds players to appear at e-waste recycling drive on Earth Day*. Retrieved from http://cincinnati.reds.mlb.com/news/press_releases/press_release.jsp?ymd=20100421&content_id=9468142&vkey=pr_cin&fext=.jsp&c_id=cin
- Colorado Rockies. (n.d.). *Storm water management plan*. Retrieved from http://colorado.rockies.mlb.com/col/ballpark/information/index.jsp?content=water_manage
- D.C. Code § 6–1451.11. (2016). Code of the District of Columbia. Retrieved from <https://beta.code.dccouncil.us/dc/council/code/sections/6-1451.11.html>
- DeFreitas, S. (2010). NASCAR race track gets solar power. *Earth Techling*. Retrieved from www.earthtechling.com/2010/08/nascar-race-track-gets-solar-power/
- Diaz, J. (2013, May 10). Sports teams use Legislature to get their way. *San Francisco Chronicle*. Retrieved from www.sfgate.com/opinion/diaz/article/Sports-teams-use-Legislature-to-get-their-way-4506737.php
- Environmental Protection Agency (EPA). (2015). MetLife Stadium (formerly New Meadowlands Stadium) environmental assessment: MOU annual report. Retrieved from www3.epa.gov/region02/greenteam/pdf/MetLife%20Feb%202015.pdf
- Environmental Protection Agency (EPA). (n.d.). *Heat island effect*. Retrieved from www.epa.gov/heat-islands
- Gallucci, M. (2015, January 1). The Super Bowl is an energy-guzzling, carbon-emitting machine: Here's what the NFL is doing about it. *International Business Times*. Retrieved from www.ibtimes.com/pulse/super-bowl-energy-guzzling-carbon-emitting-machine-heres-what-nfl-doing-about-it-1799874
- Grant, Jr., T. (2014). Comment, green monsters: Examining the environmental impact of sports stadiums. *Villanova Environmental Law Journal*, 25, 149–175.
- Green Building Alliance. (n.d.). *LEED green energy center*. Consol Energy Center. Retrieved from www.go-gba.org/projects/consol-energy-center/
- Harder, J. (n.d.). *Sustainable stadiums: National sports reach into the community through the arena of sustainable design*. U.S. Green Building Council. Retrieved from <http://plus.usgbc.org/sustainable-stadiums/>
- Henly, A. (2012). *Game changer: How the sports industry is saving the environment*. Natural Resources Defense Council. Retrieved from www.nrdc.org/sites/default/files/Game-Changer-report.pdf

- Hershkowitz, A. (2015, February 23). Selig's legacy as environmental advocate is unmatched. *SportsBusiness Journal*. Retrieved from www.sportsbusinessdaily.com/Journal/Issues/2015/02/23/Opinion/Allen-Hershkowitz.aspx
- Huggins, A. (2014, June 27). *NRDC releases guide for greening collegiate athletics and recreation*. Retrieved from www.aashe.org/blog/nrdc-releases-guide-greening-collegiate-athletics-and-recreation
- Intersector Project. (2014, June 11). *How a football stadium became a model for environmental sustainability*. Retrieved from <http://intersector.com/how-a-football-stadium-became-a-model-for-environmental-sustainability/>
- Kaelin, A. (2016, June 10). *Being green at the ballpark: Target field and sustainability*. U.S. Green Building Council. Retrieved from www.usgbc.org/articles/being-green-ballpark-target-field-and-sustainability-usgbc-minnesota
- Levi's Stadium. (2015). *2015 Sports facility of the year & 2015 venue of the year*. Retrieved from www.levis-stadium.com/stadium-info/about-levis-stadium/
- Loveday, E. (2010, October 18). Sunoco Green E15 to become official fuel of NASCAR for 2011 season. *Autoblog Green*. Retrieved from <http://green.autoblog.com/2010/10/18/sunoco-green-e15-to-become-official-fuel-of-nascar-for-2011-seas>
- Lyons Hardcastle, J. (2013, April 5). NBA to offset more than 10m pounds of CO2. *Environmental Leader*. Retrieved from www.environmentalleader.com/2013/04/05/nba-to-offset-more-than-10m-pounds-co2/
- MacMillan, A. (2016, March 14). *Greening the playing fields*. Natural Resources Defense Council. Retrieved from www.nrdc.org/stories/greening-playing-fields
- Memorandum of understanding between the United States Environmental Protection Agency (EPA) and the New Meadowlands Stadium (NMS)*. (2009). Retrieved from www3.epa.gov/region02/greenteam/pdf/new_meadowlands_stadium_MOU.pdf
- Memorandum of understanding between the United States Environmental Protection Agency (EPA) and Queens Ballpark Company LLC*. (2008). Retrieved from www3.epa.gov/region02/greenteam/pdf/ny_mets_MOU.pdf
- Mendocino Redwood. (2012, June 24). *Oakland A's fans enjoy Earth Day event, take home 10,000 redwood seedlings*. Retrieved from www.mfp.com/blog/oakland-as-fans-enjoy-earth-day-event-take-home-10000-redwood-seedlings/
- Minnesota Twins. (2011, December 13). Twins obtain LEED Silver certification for green operations. Retrieved from http://minnesota.twins.mlb.com/news/print.jsp?ymd=20111213&content_id=26154034&c_id=min
- Montreal Canadiens. (2015, December 3). *The goal is green*. Retrieved from <http://canadiens.nhl.com/club/page.htm?id=66762>
- Naokarni, R. (2015, March 20). NBA will plant three trees for each three-pointer during Green Week. *Sports Illustrated*. Retrieved from www.si.com/nba/2015/03/20/nba-green-week-three-trees-three
- National Association for Stock Car Auto Racing (NASCAR). (2008, November 14). *Official release: NASCAR hires Lynch to head "green" initiative*. Retrieved from www.nascar.com/2008/news/headlines/official/11/11/mlynch.q.a/
- National Association for Stock Car Auto Racing (NASCAR). (2009, June 12). *NASCAR announces tree planting program at tracks*. Retrieved from www.nascar.com/2009/news/headlines/official/06/12/tree-planting.program/index.html
- National Association for Stock Car Auto Racing (NASCAR). (2010, April 15). *NASCAR sponsors join forces in recycling project*. Retrieved from www.nascar.com/2010/news/business/04/15/earth.day.recycling
- National Basketball Association (NBA). (2013). *NBA Green Week presented by Sprint tips off encouraging fans to go green*. Retrieved from <http://newsroom.sprint.com/news-releases/nba-green-week-presented-by-sprint-tips-off-encouraging-fans-to-go-green.htm>
- National Basketball Association (NBA). (2015). *American Airlines Arena is world's first sports & entertainment facility to achieve LEED recertification*. Retrieved from www.nba.com/heat/news/americanairlines-arena-worlds-first-sports-entertainment-facility-achieve-leedr-gold

- National Basketball Association (NBA). (n.d.). *Portland Trail Blazers Moda Center earns LEED Gold certification*. Retrieved from www.nba.com/blazers/news/leed_certification.html
- National Football League (NFL). (2011). *NFL Green*. Retrieved from www.nfl.com/news/story/09000d5d8205a0e7/printable/nfl-green
- National Hockey League (NHL). (2010). *CONSOL Energy Center is first NHL arena to achieve LEED Gold certification*. Retrieved from www.nhl.com/penguins/news/consol-energy-center-is-first-nhl-arena-to-achieve-leed-gold-certification/c-535495
- National Hockey League (NHL). (2012). *NHL's "Gallons for Goals" initiative restores more than six million gallons of water for 2011–2012*. Retrieved from www.nhl.com/news/nhls-gallons-for-goals-initiative-restores-more-than-six-million-gallons-of-water-for-2011-2012/c-627047
- National Hockey League (NHL). (2016). *NHL, prospects join Sabres alumni to improve Buffalo*. Retrieved from www.nhl.com/news/nhl-buffalo-sabres-green-legacy-tree-project/c-280872488?tid=277764250
- Natural Resources Defense Council (NRDC). (n.d.-a). *Case study Bell Centre, home of the Montreal Canadiens*. Retrieved from www.nrdc.org/sites/default/files/Canadiens-Case-Study.pdf
- Natural Resources Defense Council (NRDC). (n.d.-b). *Case study target field, home of the Minnesota Twins*. Retrieved from www.nrdc.org/sites/default/files/Twins-Case-Study.pdf
- Newhauser, D. (2007, October 27). *NFL trees to offset Super Bowl pollution*. Retrieved from http://actrees.org/news/media-center/actrees-news/nfl_trees_to_offset_super_bowl_pollution/
- Newman, M. (2013, April 22). *Clubs celebrate Earth Day across baseball. Major League Baseball*. Retrieved from <http://m.mlb.com/news/article/45438888/major-league-baseball-clubs-celebrate-earth-day/>
- NRDC Greening Advisor. (n.d.). *LEED certified professional sports facilities*. Retrieved from <http://nfl.greensports.org/greener-building/leed/>
- Pockrass, B. (2010, April 29). *Increased recycling should only be the start of NASCAR's green effort. SceneDaily*. Retrieved from www.scedaily.com/news/articles/sprintcupseries/Bob_Pockrass_Increased_recycling_should_only_be_the_start_of_NASCARs_green_effort.html
- Porteshawver, A. (2009). *Green sports facilities: Why adopting new green-building policies will improve the environment and the community. Marquette Sports Law Review, 20*, 241–265.
- Rosen, D. (2016, March 12). *NHL begins first Green Week. National Hockey League*. Retrieved from www.nhl.com/news/nhl-green-week-from-march-12-to-18/c-279586902
- Seattle Mariners. (2008, April 18). *Seattle Mariners go carbon neutral on Earth Day*. Retrieved from http://seattle.mariners.mlb.com/content/printer_friendly/sea/y2008/m04/d18/c2547364.jsp
- Seattle Mariners. (n.d.). *Mariners sustainability*. Retrieved from <http://seattle.mariners.mlb.com/sea/ballpark/information/index.jsp?content=sustainability>
- Wright, S. (2011, April 7). *Q&A: Mike Lynch, managing director of NASCAR Green Innovation. The Oklahoman*. Retrieved from <http://newsok.com/article/3556336>

STEADY-STATE ECONOMICS AND STADIUMS

Using the Date of Ecological Maturity to conceptualize and govern sport facility construction

Christopher M. McLeod and John T. Holden

Sport facility construction and operation utilize scarce resources and produce waste during a time where humans are operating outside the Earth's finite capacity to sustain conditions for life (Mallen & Chard, 2012; Myer & Chaffee, 1997; Rockström et al., 2009; UNEP, 2007). Moreover, stadiums are being demolished and reconstructed at an increasing rate, which multiplies the sport industry's strain on the environment. In 1990, Baade and Dye wrote, "Rather than physical deterioration . . . new stadium construction is inspired by economic obsolescence" (p. 5). In 1998, Frank, Lopez, and Santana estimated the average life of arenas at 17.7 years and stadiums at 35.5 years. In 2014, Isidore estimated that the average lifespan of a National Football League (NFL) stadium had decreased to 31 years. Across all professional leagues in the United States, stadiums with shorter lifespans are more appealing given the availability of direct and indirect sources of public funding. In 2017, the Atlanta Braves will play in a new stadium opening just 20 years after playing their first game at their previous facility.

The scholarly debate around sport facility environmental sustainability has focused on building standards, sustainable management, new technologies, sustainable organizational behaviors, and communications to stakeholders (Aquino & Nawari, 2015; Chard & Mallen, 2013; Grant, 2014; Mallen & Chard, 2012; Mallen, Stevens, Adams, & McRoberts, 2010). Unfortunately, no matter how many stadiums achieve environmentally friendly standards, the ecological cost associated with frequent replacement and "upgrading" of facilities will continue to offset progress toward sustainability. In the worst-case scenario, green building standards accelerate the rate of obsolescence, vindicating owners to demolish their old facades in favor of new, improved, publicly funded "green monsters" (Grant, Jr., 2014; Kellison & Mondello, 2012; McLeod & Holden, in press).

In this chapter, we use steady-state economics to elucidate the circumstances in which a newly constructed sport facility improves or impairs environmental sustainability. This chapter is a response to Mallen and Chard (2011, 2012) who provoked sport scholars to discuss and create visions for environmental sustainability in sport facility management. We offer an alternative to their organizational-based approach, grounding the current project in macro-economic perspectives of steady-state economists. Steady-state economists endeavor to design an economy

that can exist within the bio-physical limits imposed by the Earth's environment and the natural laws that govern it. Specifically, they utilize the laws of thermodynamics to identify limits to resource and energy use. The steady-state economy must operate according to three basic rules identified by Daly (1990):

- 1 Exploit renewable resources no faster than they can be regenerated;
- 2 Deplete nonrenewable resources no faster than the rate at which renewable substitutes can be developed; and
- 3 Emit wastes no faster than they can be safely assimilated by ecosystems.

With these rules, Daly focused economists' attention on material and energy resources, their use and expulsion into waste sinks, and the limits this throughput imposes on economic growth. Adopting Daly's approach, scholars can attend to the shortcomings of material growth in sport (such as stadium reconstruction) as well as sport's potential to be an engine of value creation in a steady-state economy (McLeod & Holden, in press).

In this chapter, we use the principles of steady-state economics to develop a concept and policy tool called the *Date of Ecological Maturity (DEM)*. We demonstrate how scholars can use the DEM to conceptualize sustainable facility construction and management in a steady-state sport economy. We also demonstrate how practitioners can use the DEM as a policy tool to govern or incentivize sustainability in publicly funded stadiums. Public financing presents a unique opportunity for evaluating capital construction projects and associated throughputs; scholars and government officials can use this information to chart a trajectory towards a national and worldwide steady-state economy.

In the next section, we review ecological economics, a forebear of steady-state economics, and review literature on sport event and facility throughputs. We then detail the principles of steady-state economics and draw implications for the sport industry. After, we define DEM and discuss how it can be used to conceptualize sustainable sport facility construction and operation. We then describe how DEM can be used in policy and law to govern publicly funded stadium construction. We conclude with a discussion of limitations and future research.

Ecological economics and throughputs of matter and energy

Georgescu-Roegen (1971) founded the ecological approach to economics by applying thermodynamic laws to economic processes. The four thermodynamic laws describe the properties of energy and its transformation from one form to another (Atkins, 2007). The laws govern all natural processes in the universe and, consequently, pose limits to human economic, technological, and social development. Georgescu-Roegen recognized that economic processes involve energy transformations, so he submitted economic theory to a set of trials: Does economic theory satisfy thermodynamic principles?

The economy can be conceptualized thermodynamically as a wealth creating subsystem of the system of Earth, which, with surroundings, constitutes a universe (Daly, 1991). Economic and thermodynamic theories posit differing interpretations of the characteristics of this subsystem. In economic theory, the economy subsystem is circular (see Figure 33.1) (Daly & Farley, 2010). Value embodied in goods, services, and income flows from firms to households and equal value flows back to firms from households as payments and labor. Growth is achieved via technological enhancement, population growth, debt, divisions of labor, or reinvestment of earnings in capital.

In thermodynamic theory, the economy subsystem is coupled with a physical flow of matter and energy that is unidirectional and linear (see Figure 33.2) (Daly & Farley, 2010). In other

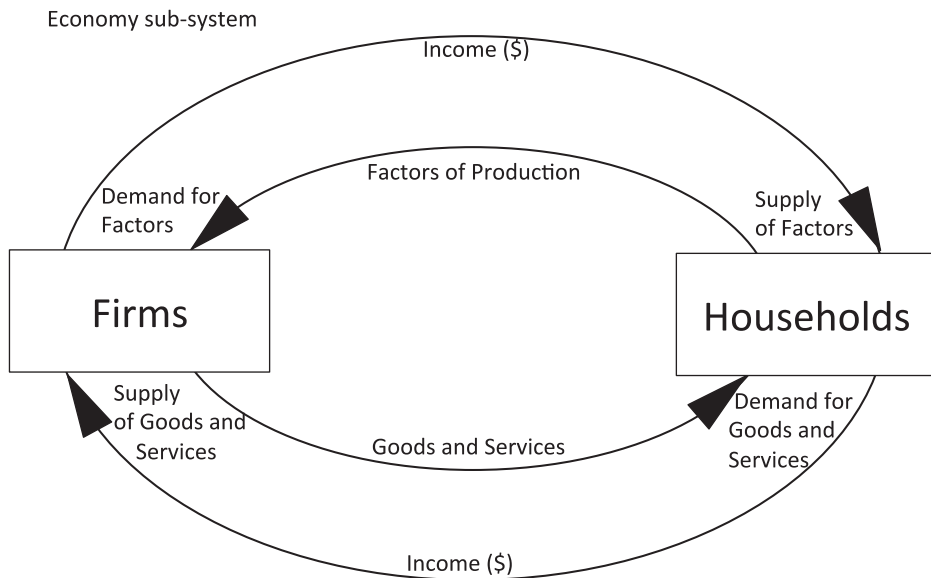


Figure 33.1 The circular flow of the economy according to neoclassical economics

Source: Adapted from Daley and Farley, 2010, p. 24

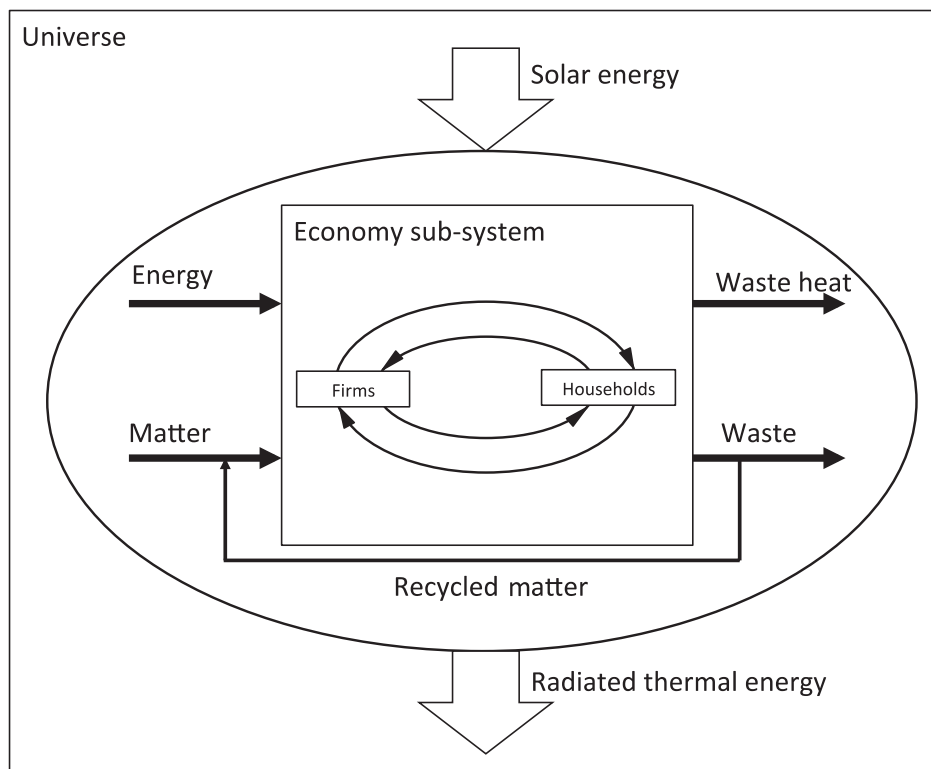


Figure 33.2 The ecological economic model of the economy. This model depicts the economy as an open system with a material throughput within the closed system of Earth

Source: Adapted from Glucina & Mayumi, 2010

words, valuable natural resources go into an economic process, and valueless waste is thrown out (Georgescu-Roegen, 1971/1980). This throughput is a fundamental part of any economic process. It also imposes limits on economic growth. These limits can be elucidated using the first and second laws of thermodynamics.

The first law of thermodynamics states that energy cannot be created or destroyed (Ehrlich, Ehrlich, & Holdren, 1980). If energy is needed to do value-adding work, it must be taken from somewhere. Moreover, it does not disappear when used, but instead will always show up in another form or another place. The first law establishes which economic processes are feasible: only those which maintain the total quantity of energy in the universe (Atkins, 2007).

The second law of thermodynamics states that all physical processes decrease the availability of energy (Ehrlich et al., 1977) – which is to say that although an economic process retains a quantity of energy from start to finish (i.e., the first law), it also disperses this quantity as heat or entropy (disorder) such that the same quantity of energy decreases in quality and becomes progressively less useful. Some processes, such as those occurring in a refrigerator, operate in the other direction by decreasing entropy; however, these processes are always accompanied by an increase in entropy somewhere else (such as a power station), which more than accounts for the decrease in entropy within the refrigerator (Atkins, 2007). The second law establishes which of the feasible economic processes actually occur – those that are spontaneous, and those that require work from another spontaneous process (Atkins, 2007).

Five implications follow:

- 1 In any transformation of energy, some of the energy is degraded.
- 2 No process is possible whose sole result is the conversion of a given quantity of heat (thermal energy) into an equal amount of useful work.
- 3 No process is possible whose sole result is the flow of heat from a colder body to a hotter one.
- 4 The availability of a given quantity of energy can only be used once; that is, the property of convertibility into useful work cannot be “recycled.”
- 5 Technology has limits; it can only ever approach maximum efficiency of energy conversion to work. (Ehrlich et al., 1977; Glucina & Mayumi, 2010)

On top of these limits to energy, Georgescu-Roegen (1971) argued that matter was similarly constrained. It is well established that matter cannot be created or destroyed. Thermodynamics also implies that the useful transformation of matter is constrained by limits to energy described earlier, but Georgescu-Roegen (1971) argued, additionally, that it was impossible to completely recycle matter because physical processes also create entropy through wear, friction, and dispersion via ash, soot, etc. Although scholars have disputed Georgescu-Roegen’s arguments on theoretical grounds, they have accepted his observation on the impossibility of complete recycling as a practical limit to the economy (Beard & Lozada, 1999).

Georgescu-Roegen (1971/1980) concluded, “From the viewpoint of thermodynamics, matter-energy enters the economic process in a state of *low entropy* [useful] and comes out in a state of *high entropy* [less useful]” (p. 51, original emphasis). Consequently, the economic subsystem is subject to two limits of the Earth’s system. The first limit concerns the total availability low-entropy matter and energy. For instance, the sun provides abundant energy, but at a constant rate, whereas terrestrial stocks (such as coal and gas deposits) provide finite resources accessible at an adjustable rate. Thus, humans are limited, over the long run, to an economy that can operate on, and not exceed, the rate of energy provided by the sun.

The second limit concerns the total sinks into which high entropy matter and energy can be discarded (Georgescu-Roegen, 1971). The capacity of the Earth to absorb heat and waste is the most pressing problem in the early 21st century, as evidenced by global warming. For example, Rockström and colleagues (2009) demonstrated humanity is exceeding the safe operating boundaries of three planetary processes (i.e., climate change, biodiversity loss, and nitrogen cycle). The Global Footprint Network estimated humans use the equivalent of 1.6 planets to provide resources and absorb waste (Global Footprint Network, 2016). This unidirectional and linear flow of matter and energy, taken from low-entropy sources and deposited in waste sinks, necessarily accompanies all economic processes and constitutes a real and imminent limit to economic growth, especially if growth is characterized by the production and consumption of physical goods or buildings (Glucina & Mayumi, 2010).

Throughputs of matter and energy in sport

In sport, scholars have begun utilizing ecological footprint analyses, input–output modeling, and life cycle analysis to quantify sport event– and facility-related throughputs. Each of these methods is superior for evaluating overall throughputs when compared to descriptive and/or qualitative methods (Collins, Jones, & Munday, 2009; but for examples of descriptive methods, see Mallen et al., 2010; Tziralis, Tolis, Tatsiopoulos, & Aravossis, 2006). However, these methods are less effective at accounting for local effects sport can have on fragile ecologies or biodiversity, such as in alpine environments (May, 1995). Collins and colleagues (2007) estimated visitor resource consumption for the 2003/04 FA Cup Final in Cardiff at 3,051 global hectares (gha) per day or 0.0417 gha per visitor. When compared with each visitor’s ecological footprint at his or her home location, Collins et al. (2007) estimated the event created an additional ecological footprint of 2,663 gha per day, or an additional 0.0364 gha per visitor.

The event venue had a relatively small impact on Collins et al.’s (2007) calculations. This small impact is because they used partial data and optimistic assumptions about the total life of a facility that are unlikely to hold in the U.S. professional sport context. For instance, the authors only calculated materials and the transport of materials to the location; they then spread these partial throughputs over an estimated 100-year lifespan, excluded operating throughputs, and calculated venue waste in a separate category.

Using input–output tables, Collins et al. (2007) estimated visitor consumption for the FA Cup created 560 tons of total direct and indirect greenhouse gas emissions. Jones (2008) estimated the 2004 Wales World Rally Championship (a form of motorsport with road-legal cars, distinguished by running from point to point rather than in a circuit) created a total of 3,540 tons of greenhouse gas emissions and 2,950 tons of waste. Jones (2008) added that the rally ranked low compared with other value-generating activities in terms of value added per pound of carbon emitted and value added per pound of waste.

Myer and Chaffee (1997) reported on a life cycle assessment of three different design options for the Sydney Olympic Stadium. The authors compared an improved design option – which included existing and available impact-reduction technologies – to a basic design option, and calculated reductions to total throughputs, including 50 percent of water consumption, 20 percent of total energy use, 30 percent of greenhouse gases, 40 percent of hazardous air pollution, and 15 percent of toxic water pollution. An “enhanced” case with cutting-edge technologies provided further reductions of 5 to 25 percent across each category. Their results showed building and design can yield significant reductions in projected energy and water consumption, greenhouse gas emissions, and air and water pollution.

Myer and Chaffee (1997) also concluded that greenhouse gas emissions and toxic air pollution from stadium construction are of the same order of magnitude as those related to operation during the lifespan of the building. This finding means the increasing rate of demolition and construction is just as problematic as stadium inefficiency, in that they produce equivalent throughputs.

Steady-state economics

Herman E. Daly (1990, 1991) developed steady-state economics as a theoretical framework to account for the limits to growth identified by Goergescu-Roegen. Steady-state economists seek:

an economy with constant stocks of people and artifacts, maintained at some desired, sufficient levels of low rates of maintenance “throughput,” that is, by the lowest feasible flows of matter and energy from the first stage of production (depletion of low-entropy materials from the environment) to the last stage of consumption (pollution of the environment with high-entropy wastes and exotic materials).

(Daly, 1991, p. 17)

Although Daly’s steady-state economy holds capital stocks, sport facilities, consumer goods, and human populations fairly constant, it allows for changes of culture, genetic inheritance, social relationships, knowledge, ethical codes, and sport and leisure practices. Similarly, although quantitative *growth* is restricted, qualitative *development* is promoted and celebrated. Sport may contribute to a steady-state economy in terms of qualitative development, but only if it can be delimited from unnecessary material throughputs – stadium construction included.

Using the principles of ecological and steady-state economics, it is possible to reinterpret Myer and Chaffe’s (1997) finding about the quantitative equivalence of stadium construction and operation throughputs. That is, a new stadium cannot necessarily be justified because it is expected to be more efficient, because construction by itself contributes as much to the building’s throughput as its operation. Building standards and efficient technologies, therefore, are a half-measure; a single, inefficient stadium that lasts 60 years may utilize fewer total throughputs than three stadiums built to the highest standards, each lasting 20 years. In this case, keeping a single, inefficient stadium for 60 years may be better for maintaining a steady-state economy than building three environmentally friendly stadiums over the same time frame.

In striving for a steady-state, ecological economists found it necessary to reevaluate numerous taken-for-granted positions in economics, including definitions of fair distribution, mechanisms for efficient allocation, the ideal operating scale of the economy, the characteristics of quality growth, national income accounting, the measurement of value, and governing institutions (Daly, 1991; Daly & Farely, 2010; Kallis, Gómez-Baggethun, & Zografos, 2013). In this chapter, we focus on achieving sustainable throughputs in one small subsector of the economy: stadium and facility construction and operation.

Date of Ecological Maturity

Suppose our goal is to create a steady-state sport economy, one with a constant stock of artifacts maintained by the lowest feasible throughputs of matter and energy. Additionally, suppose we start with today’s stocks and flows and endeavor to maintain today’s capacity to deliver spectator sport. Under what conditions should we accept or decline a new sport stadium or facility? We accept to build a new stadium if it maintains or decreases total throughputs. We decline to build a new stadium if it increases total throughputs.

A new stadium must satisfy a minimum of two conditions to maintain or decrease total throughputs:

- 1 It must replace an existing stadium
- 2 The new stadium's long-term operating throughputs must be lower than those of the existing stadium such that, at some point in the future, total throughputs are minimized by selecting the new stadium as a replacement for the existing stadium

In other words, we can show the conditions for accepting a new stadium by designing an opportunity cost analysis to compare and evaluate the throughputs of two options (see Figure 33.3). Option A is to decline the new stadium and maintain operations of the existing facility. Option B retains today's capacity to deliver spectator sport. To measure the ecological cost of this option, one would measure the total throughputs associated with operating the existing facility (Slope C).

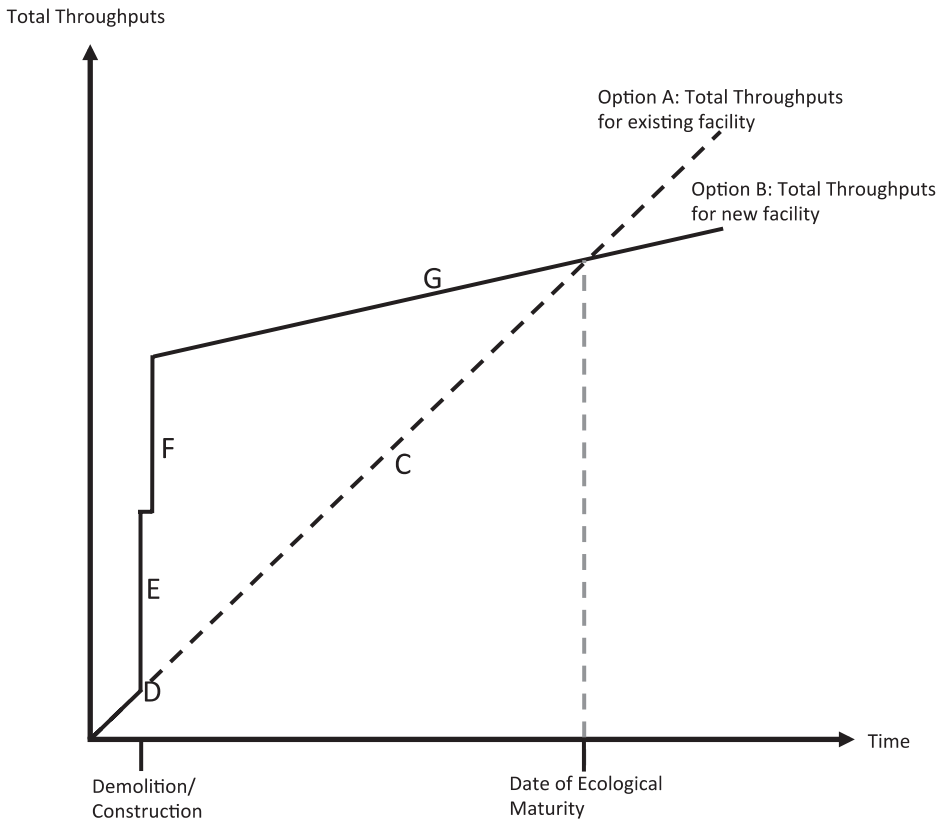


Figure 33.3 Visualization of the Date of Ecological Maturity (DEM). The DEM is the point in time where the total throughputs of a new facility intercept and undercut the total throughputs of the existing facility. In this graph, slope (C) represents the long-term operating throughputs of the existing facility; (D) represents the total throughput of the existing facility at the time of demolition; (E) represents the total throughput associated with demolition; (F) represents the total throughput associated with construction; and slope (G) represents the long-term throughputs of the new facility. Option B consists of throughputs equal to C. Option A consists of throughputs equal to $D + E + F + G$.

Option B is to accept the new stadium as a replacement of the existing facility. Option B should also retain today's capacity to deliver spectator sport. To measure the ecological cost of this option, one would measure the total throughputs associated with replacing and operating the new stadium. Therefore, the ecological cost of Option B includes the total throughputs of the existing stadium at the time of demolition (D) in addition to the total throughputs associated with demolishing the old stadium (E), as well as the total throughputs associated with constructing the new stadium (F), and finally the total throughputs associated with operating the new stadium (Slope G).

If the new stadium has lower long-term operating throughputs than the existing stadium, then there will be a point in time where the throughput associated with Option B will intercept the throughput associated with Option A. In Figure 33.3, this point is represented by slope G being closer to horizontal than slope C, so that G will eventually intercept C. In this example, there will be a point in time where the new facility will contribute to the steady-state sport economy by maintaining and, thereafter, decreasing total throughputs. We call this point in time the Date of Ecological Maturity (DEM). Its hypothetical existence is the only way to justify any stadium or facility construction project from the perspective of ecological economics.

It is important to note that a new stadium will only have a DEM intercept if its long-term operating throughputs are less than the existing stadium's long-term operating throughputs. This condition means enhanced technology, design, efficiency, and management techniques, which are already being promoted by Leadership in Energy and Environmental Design (LEED) certification and the Green Sports Alliance, are necessary to ensure a steady-state sport economy, although they are not sufficient. The DEM concept has the healthy effect of attending to the criticisms leveled against LEED by turning managers' attentions towards the actual operations of sport facilities (Grant, Jr., 2014). For example, steady-state sport managers are skeptical of recycling because they know it does not necessarily decrease overall throughputs: at best, recycling uses additional energy to put matter through another economic cycle (thereby delaying the expulsion of high-entropy waste); at worst, recycling requires even more low-entropy matter and energy to sort, transport, and repurpose, which in turn increases overall throughputs. Thus, using DEM, managers must attend to reducing total throughputs rather than pursuing environmentally friendly or green building standards.

Without measuring stadium and facility throughputs, it is impossible to know the actual or projected DEM. However, based on the example in Figure 33.3, four hypothetical scenarios will govern the length of time between the date of demolition/construction and DEM:

- 1 If an existing facility has a higher long-term total throughput, time between demolition/construction and DEM will be shorter (if slope C is closer to vertical in Figure 33.3).
- 2 If a new facility has a smaller total demolition throughput, time between demolition/construction and DEM will be shorter (if D is shorter in Figure 33.3).
- 3 If a new facility has a smaller total construction throughput, time between demolition/construction and DEM will be shorter (if E is shorter in Figure 33.3).
- 4 If a new facility has a smaller long-term operating throughput, time between demolition/construction and DEM will be shorter (if slope F is closer to horizontal in Figure 33.3).

Each scenario (as well as a combination of the scenarios) will result in an earlier DEM. All else being equal, managers of a steady-state sport economy should prefer an earlier DEM to a later one. This principle is analogous to using the payback period to evaluate and compare capital expenditures (see Brown, Rascher, Nagel, & McEvoy, 2016). In the same way as financial managers should choose the project which pays back debt the earliest, ecological managers should

choose the project which reaches ecological maturity at the earliest date. Moreover, steady-state sport managers should only support projects that are going to reach the DEM. If a new sport facility is replaced prior to undercutting the existing facility's throughput, then all the improvements made to operating efficiency of the new facility are wasted.

Finally, it is important to note that the sport industry has unique characteristics, absent from other industries, which make the DEM a feasible way to conceptualize capital construction projects. Owners of sport teams exert considerable effort controlling the number of leagues and teams so as to exploit athletes, charge higher prices to consumers, and leverage local governments for taxpayer dollars (Krautmann, Von Allmen, & Berri, 2009; Noll, 2003; Noll & Zimbalist, 1997). In doing so, they have also created the conditions whereby stadiums and facilities replace existing stadiums and facilities. In other industries, most buildings are constructed to add to the existing stock of buildings. It is difficult, for example, to conceptualize a new Starbucks as a replacement, because the number of Starbucks increases with every one built. On the other hand, it is easy to conceptualize a new NFL stadium as replacing an existing NFL stadium because there are a limited number of teams, each moving from stadium to stadium as one is built and another is made obsolete. Thus, it is simple to identify Option A (the existing facility) and Option B (the new facility). Consequently, owners have created perfect conditions for scholars to use the DEM to evaluate stadium construction. At the same time, owners have created the perfect conditions for government officials to use the DEM as a policy tool, as discussed further next.

Date of Ecological Maturity as a policy tool

Owners of sport teams have also spent considerable effort attaining direct and indirect sources of public funding from city, state, and federal governments. Because of this effort, government officials have unique opportunities to use the DEM to ensure that sport stadiums and facilities receiving public funding are built according to the principles of a steady-state sport economy. We recommend government officials include stipulations based on the DEM in public financing and leasing contracts. Consider as an example a leasing contract that stipulates a penalty for the team if it breaks its lease prior to reaching the DEM. This stipulation would incentivize a team to achieve an earlier DEM, in turn, putting downward pressure on operating throughputs, demolition throughputs, and construction throughputs. As a result, the overall stock of sport stadiums will be maintained with the lowest feasible throughputs of matter and energy. In this section, we explore legal mechanisms for including the DEM in new stadium and facility construction.

The current legal landscape governing sports stadium subsidies has three regulatory levels: federal law, state law, and local (or municipal) law. At each level of government is an opportunity to contractually bind or make subsidies contingent upon compliance with conditions associated with the DEM.

Federal law

Tax laws

Federal law affects sports stadium construction through taxation mechanisms. Gans (2009) noted that the Revenue Act of 1913 was the first piece of legislation that exempted income from "debt obligations or bonds of states, cities or counties" (p. 756). Over the last century, various pieces of federal legislation have attempted to revise the Revenue Act's exemptions (Gans, 2009) including some legislation such as the 1986 Tax Reform Act that have had a greater impact than other

bills. In 1996, Senator Daniel Moynihan proposed an amendment to the Internal Revenue Code that would put special requirements on bonds issued to finance professional sport stadiums; however, this amendment failed to pass (Bordson, 1997). A similar amendment to the Internal Revenue Code could precondition a tax exemption for stadium bonds on compliance with the DEM. Moreover, Congress could encourage compliance with certain ecological checks and balances through the U.S. Constitution's taxing power. Tax incentives are a common way to encourage compliance with federal government objectives and could effectively incentivize sustainable stadium life cycles.

Environmental regulations

Stadium operators are required to comply with the Clean Air Act, Clean Water Act, and the National Environmental Policy Act (NEPA) (Grant, Jr., 2014). NEPA's requirements include environmental assessments and environmental impact statements whenever "airports, buildings, military complexes, highways, parkland purchases, and other federal activities are proposed" (EPA, 2016). Grant, Jr. (2014) noted that various states such as California have complementary statutes that provide additional protections beyond those of the federal statutes. Although the Clean Air Act and Clean Water Act affect stadium construction with regard to the actual materials and design of the stadium, NEPA's impact is less frequently felt on stadium construction by virtue of the lack of federal agencies involved in constructing sports stadiums (Grant, Jr., 2014). State-level statutes such as the California Environmental Quality Act (CEQA) are frequently implicated by virtue of the unavoidable collaboration of state agencies with professional sports teams (see Chapter 29).

Grant (2014) observed state and local environmental requirements may influence teams' decisions around relocation destination options, leading to location shopping on the behalf of owners. A federal policy would be a powerful alternative to the patchwork system of state laws. However, public stakeholders are known to react when the federal government usurps a role traditionally played by states and municipalities. Alternatively, steady-state sport managers could seek the assistance of the Uniform Law Commission to formulate a piece of draft legislation to circulate amongst the states thereby alleviating federalism concerns.

State and municipal funding

Municipal bonds used to fund sports venues typically fall into two categories: General obligation bonds and revenue, or PILOT, bonds (Friedman, 2015). General obligation bonds are paid back by the general tax revenue and require voter approval (Friedman, 2015). Stadium projects typically gain voter approval because they are high profile. Disclosure of the environmental costs and estimated DEM for proposed stadiums will better inform voters. Friedman (2015) noted that municipal bonds have continuing disclosure requirements, though the enforcement of penalties against non-compliant entities has been minimal. The regulation of bond issuance may be another way to implement sensible ecological accounting protocols.

Compared to general obligation bonds, revenue bonds are repaid from specified revenue streams and voter approval is not required (Friedman, 2015). In this case, responsibility resides with the policymakers. Municipal bond advisors, who help facilitate bond issuances, owe a fiduciary duty to act "in the best interests of their state and local government clients" (Municipal Securities Rulemaking Board, 2014). A feasible amendment would require municipal bond advisors to act in the best interests of the citizens, thereby providing an avenue for ecological impact to be incorporated as part of the bond issuance process.

Contractual lease provisions

In the United States, there is broad authority to negotiate and structure contracts as the parties desire, so long as the contract does not have certain deficiencies. Therefore, courts will generally enforce contracts as drafted subject to certain exceptions. As a result, public financiers and stadium owners can incorporate environmental standards into contracts. McLeod and Holden (in press) recommended municipalities condition stadium financing on compliance with various environmental accounting standards. For instance, there is a provision in the master agreement between the city of Arlington (Texas) and Rangers Baseball LLC (2016) incorporating environmental assessments. However, we propose that municipalities should dictate environmental assessments with greater specificity. Currently, the only obligation is to comply with applicable law; this requirement does not adequately attend to the total ecological cost of stadium construction.

Most standard stadium lease agreements include conditions occasioning the termination of the lease prior to the agreed end date. Commonly, a lease can be terminated early if the facilities are condemned (e.g., Article XI Cowboys Complex Lease Agreement, 2005). It is possible to include initial and ongoing ecological impact assessments to act as guides for initial lease term and for occasioning an event that may dictate pre-term termination. Financers could make the earliest termination date synonymous with the DEM.

Discussion of limitations and future research

In this chapter, we have used steady-state economics to elucidate the circumstances in which a newly constructed sport facility improves or impairs environmental sustainability. A stadium contributes to a steady-state sport economy on the date that it matures ecologically, as indicated by the DEM. We have also argued that this date can be incorporated within federal, state, and municipal law as well as within contractual provisions.

Incorporating the DEM will require an infrastructure for measuring sport facility throughputs, including a set of measurement standards based on best practices. One would need to measure and project the throughputs of the existing stadium as well as estimate and continually measure the throughputs of the replacement stadium. We have not discussed the issue of measurement in depth in this chapter, which is underdeveloped in the sport and environment literature (Collins et al., 2009). Nevertheless, we have touched on three likely measurement tools in the literature: ecological footprint, input-output modeling, and life cycle analysis. Future work on DEM and sport and environment literature in general will need to develop and implement measurement techniques, as well as evaluate various approaches towards developing an industry standard (Collins et al., 2009; see also Chapter 15). It is worth pursuing this difficult task. When the DEM is implemented, sport scholars will have access to the first data on throughputs collected longitudinally throughout the construction and operation of a stadium.

The model we have outlined here is simple. However, we believe it provides a base on which to build a complicated and accurate representation of stadium construction, operation, and associated throughputs (McLeod & Holden, in press). For example, the concept of DEM can account for non-linear throughputs, multipurpose facilities, reused materials, and facilities that remain in use after the team moves (see McLeod & Holden, in press). Future research is needed to complicate the assumptions introduced here and test them empirically.

An important scenario to consider is what happens if, when scholars or practitioners begin measuring DEMs, they find dates are so long into the future as to be unfeasible. What if new stadiums never reach a point where throughputs are maintained and thereafter reduced, or what

if this point is so far ahead that owners refuse to accept stipulations? If any of these hypothetical situations becomes reality, then DEM becomes one further argument against public financing. In this case, DEM shows that the public cost of citizen-financed stadiums is not only financial, but also ecological.

As noted, the DEM concept presented here is unable to account for local, case-specific environmental impacts. For example, it is not yet designed to account for effects on fragile environments, biodiversity, and animal habitats, or local impacts on human health. Therefore, in sport, the DEM concept is unable to evaluate ski-field construction (May, 1995), the effect of stadiums on bird migratory patterns or noise pollution (Grant, Jr., 2014), or the effects of atmospheric pollutants on acute and chronic illness (Peel, Klein, Flanders, Mulholland, & Tolbert, 2010). We recommend using DEM as a baseline representation of the necessary conditions for sustainable sport facility construction. It can be used in concert with contextually specific evaluations of environmental impact such as the Sport Event Environmental Performance Measure (Mallen et al., 2010).

Conclusion

Scholars concerned with sport facility environmental sustainability must adopt the macro-economic perspective of ecological economists. Georgescu-Roegen and Daly show that all stadiums have associated throughputs. Although some stadiums have fewer throughputs than others, it remains to be seen whether the continuous replacement of stadiums, even with “environmentally friendly” alternatives, is better or worse for achieving a steady-state sport economy. We have provided the Date of Ecological Maturity as a way to conceptualize and govern when and what types of new sport facilities to accept.

Sport is a perfect place to evaluate throughputs because publicly funded facilities are unique in two ways. First, leagues work hard to limit competition; as a result, most newly constructed stadiums are replacements. Ironically, this effort to exploit athletes and consumers creates the conditions we need to evaluate capital construction projects from the perspective of ecological economics. Second, owners work hard to add city, state, and federal tax dollars to their financial statements. As a result, public officials have leverage, and with it, an opportunity to lead one of the most visible and culturally celebrated industries toward a sustainable, steady-state economy.

Scholars have unanimously critiqued both these characteristics of monopolistic professional sport. We suggest appropriating owners’ monopoly power and using it to practice steady-state economics. In sport, there is a microcosm of growth-centric construction projects that can be used to gather data and inform policy that will inform sustainable practices throughout the economy.

References

- Aquino, I., & Nawari, N. O. (2015). Sustainable design strategies for sport stadia. *Suburban Sustainability*, 3(1), 1–31.
- Atkins, P. (2007). *Four laws that drive the universe*. Oxford, UK: Oxford University Press.
- Baade, R. A., & Dye, R. F. (1990). The impact of stadiums and professional sports on metropolitan area development. *Growth and Change*, 21(2), 1–14.
- Beard, T. R., & Lozada, G. A. (1999). *Economics, entropy and the environment: The extraordinary economics of Nicholas Georgescu-Roegen*. Cheltenham, UK: Edward Elgar.
- Bordson, B. (1997). Public sports stadium funding: Communities being held hostage by professional sports team owners. *Hamline Law Review*, 21, 505–536.

- Brown, M. T., Rascher, D. A., Nagel, M. S., & McEvoy, C. D. (2016). *Financial management in the sport industry* (2nd ed.). Scottsdale, AZ: Holcomb Hathaway.
- Chard, C., & Mallen, C. (2013). Renewable energy initiatives in Canadian sport stadiums: A content analysis of web-site communications. *Sustainability*, 5(3), 5119–5134.
- Collins, A., Flynn, A., Munday, M., & Roberts, A. (2007). Assessing the environmental consequences of major sporting events: The 2003/05 FA Cup Final. *Urban Studies*, 44(3), 457–476.
- Collins, A., Jones, C., & Munday, M. (2009). Assessing the environmental impacts of mega sporting events: Two options. *Tourism Management*, 30, 828–837.
- Cowboys complex lease agreement between City of Arlington and Cowboys stadium, L.P. (2005, September 1).
- Daly, H. E. (1990). Toward some operational principles of sustainable development. *Ecological Economics*, 2(1), 1–6.
- Daly, H. E. (1991). *Steady-state economics: Second edition with new essays*. Washington, DC: Island Press.
- Daly, H. E., & Farley, J. (2010). *Ecological economics: Principles and applications*. Washington, DC: Island Press.
- Environmental Protection Agency (EPA). (2016). *Summary of the National Environmental Policy Act*. Retrieved from www.epa.gov/laws-regulations/summary-national-environmental-policy-act
- Ehrlich, P. R., Ehrlich, A. H., & Holdren, J. P. (1977). *Esoscience: Population, resources, environment*. San Francisco, CA: W.H. Freeman.
- Friedman, M. (2015). Continuing disclosure requirements and the continued use of municipal bonds in sports. *Marquette Sports Law Review*, 26(1), 91–109.
- Gans, L. E. (2009). Take me out to the ball game, but should the crowd's taxes pay for it. *Virginia Tax Review*, 29, 751–786.
- Georgescu-Roegen, N. (1971). *The entropy law and the economic process*. Cambridge, MA: Harvard University Press.
- Georgescu-Roegen, N. (1971/1980). The entropy law and the economic problem. In H. E. Daly (Ed.), *Economics, ecology, ethics: Essays toward a steady-state economy* (pp. 49–60). San Francisco: W. H. Freeman and Company.
- Global Footprint Network. (2010). *National footprint accounts: 2010 edition*. Retrieved from www.footprint-network.org/en/index.php/GFN/page/world_footprint/
- Glucina, M. D., & Mayumi, K. (2010). Connecting thermodynamics and economics: Well-lit roads and burned bridges. *Annals of the New York Academy of Sciences*, 1185(1), 11–29.
- Grant, Jr., T. (2014). Comment, green monsters: Examining the environmental impact of sports stadiums. *Villanova Environmental Law Journal*, 25, 149–175.
- Isidore, C. (2014, September 8). *NFL stadiums: Higher costs, shorter lifespans*. Retrieved from <http://money.cnn.com/2014/09/08/news/companies/nfl-stadiums/>
- Jones, C. (2008). Assessing the impact of a major sporting event: The role of environmental accounting. *Tourism Economics*, 14(2), 343–360.
- Kallis, G., Gómez-Baggethun, E., & Zografos, C. (2013). To value or not to value? That is not the question. *Ecological Economics*, 94, 97–105.
- Kellison, T. B., & Mondello, M. J. (2012). Organisational perception management in sport: The use of corporate pro-environmental behavior for desired facility referenda outcomes. *Sport Management Review*, 15, 500–512.
- Krautmann, A. C., Von Allmen, P., & Berri, D. (2009). The underpayment of restricted players in North American sports leagues. *International Journal of Sport Finance*, 4(3), 161–175.
- Mallen, C., & Chard, C. (2011). A framework for debating the future of environmental sustainability in the sport academy. *Sport Management Review*, 14, 424–433.
- Mallen, C., & Chard, C. (2012). “What could be” in Canadian sport facility environmental sustainability. *Sport Management Review*, 15, 230–243.
- Mallen, C., Stevens, J., Adams, L., & McRoberts, S. (2010). The assessment of the environmental performance of an international multi-sport event. *European Sport Management Quarterly*, 10(1), 97–122.

- Master agreement regarding Ballpark complex project between City of Arlington and Rangers Baseball LLC. (2016, May 24). Retrieved from <http://arlington-tx.gov/ballparkproject/wp-content/uploads/sites/61/2016/06/Master-Agreement.pdf>
- May, V. (1995). Environmental implications of the 1992 Winter Olympic Games. *Tourism Management*, 16(4), 269–275.
- McLeod, C. M., & Holden, J. T. (in press). Ecological economics and sport stadium public financing. *William & Mary Environmental Law & Policy Review*, 41(3).
- Municipal Securities Rulemaking Board. (2014). *Six things to know when issuing municipal bonds*. Retrieved from <http://msrb.org/msrb1/pdfs/MSRBSixThingstoKnow.pdf>
- Myer, A., & Chaffee, C. (1997). Life-cycle analysis for design of the Sydney Olympic stadium. *Renewable Energy*, 10(2/3), 169–172.
- Noll, R. G. (2003). The organization of sports leagues. *Oxford Review of Economic Policy*, 19(4), 530–551.
- Noll, R. G., & Zimbalist, A. S. (1997). *Sports, jobs, and taxes: The economic impact of sports teams and stadiums*. Washington, DC: Brookings Institution Press.
- Peel, J. L., Klein, M., Flanders, W. D., Mulholland, J. A., & Tolbert, P. E. (2010). Impact of improved air quality during the 1996 Summer Olympic Games in Atlanta on multiple cardiovascular and respiratory outcomes. *Health Effects Institute*, 148, 1–23.
- Rockström, J., Steffen, W., Noone, K., Persson, Å., Chapin III, F. S., Lambin, E., . . . Foley, J. (2009). Planetary boundaries: Exploring the safe operating space for humanity. *Ecology and Society*, 14(2), 32.
- Tziralis, G., Tolis, A., Tatsiopoulos, & Aravossis, K. G. (2006). Economic aspects and the sustainability impact of the Athens 2004 Olympic Games. *WIT Transactions on Ecology and the Environment*, 98, 21–33.
- United Nations Environmental Programme (UNEP). (2007). *Global environment outlook 4: Summary for decision makers*. Retrieved from www.unep.or/geo/geo4/media/GEO4%20SDM_launch.pdf

Epilogue



Taylor & Francis

Taylor & Francis Group
<http://taylorandfrancis.com>

A PRAGMATIC PERSPECTIVE ON THE FUTURE OF SUSTAINABILITY IN SPORT

Timothy B. Kellison and Brian P. McCullough

In October 2016, U.S. President Barack Obama hosted sport sustainability leaders at the White House to commemorate the inaugural Green Sports Day, marking an historic occasion that not only reiterated the imperative of addressing global climate change and environmental degradation, but also recognized the important role sport must play in this undertaking (The White House, 2016). Just one month later, Americans elected as their next president Donald Trump, an individual who has pledged to profoundly weaken the authority of – or eliminate altogether – the Environmental Protection Agency (EPA; Davenport, 2016); appointed “one of the nation’s most visible climate contrarians” (Fountain, 2016, p. A10), Myron Ebell, to lead his EPA transition team; and called the notion of global warming a creation “by and for the Chinese” (Trump, 2012), “a total hoax” (Trump, 2013), and “bullshit” (Trump, 2014). Earlier that year, the facilities of the San Francisco 49ers (NFL) and Sacramento Kings (NBA) obtained their respective leagues’ highest levels of Leadership in Energy and Environmental Design (LEED) certification (i.e., respectively, Levi’s Stadium, Gold EBOM; Golden 1 Center, Platinum; Sport and Urban Policy Initiative, 2016a). Yet for every stadium construction in North America receiving LEED certification in the past decade (across MLB, MLS, the NBA, the NFL, and the NHL), two others opened without a comprehensive pro-environmental design (Kellison, Trendafilova, & McCullough, 2015). This back-and-forth exemplifies a paradox revealed in our previous work – that environmental sustainability is “on the precipice of becoming a mainstream issue in the sport and entertainment industry” (Kellison & McCullough, 2016, p. 16) in spite of its “slow rate of progress” (Kellison et al., 2015, p. 75).

The chapters presented in this book further support this appraisal of the state of environmental sustainability in sport. Throughout the book, a number of pioneering individuals, organizations, and institutions are rightfully applauded for designing and adopting pro-environmental innovations, thereby catalyzing the sustainability movement in sport (McCullough, Pfahl, & Nguyen, 2016). In addition, content experts share their experience and insight on how best to implement and promote environmental initiatives. Recognizing the need for reform in areas, however, some contributors offer critical analyses of and methods for improving event management, the measurement of environmental impacts, and the manner in which teams strategize and promote environmental programs. Other contributors call for increasing and enhancing scholarly research and professional preparation. Finally, ominous predictions about the future of sport – and more importantly, the planet and humanity – are presented (DeChano-Cook &

Shelley, Ch. 5, this volume). At a time when world leaders – both political (e.g., Obama, 2016) and non-political (Francis, 2015) – have called for immediate and sweeping interventions to disrupt and reverse negative environmental trends, the sport industry has the power to leverage its influential platform to effect social change (Kellison et al., 2015). In this concluding chapter, we assess the current state of sport and the environment and look to the future while remaining mindful of the significant challenges before us.

Sport as a forceful catalyst for pro-environmental action

As contended throughout this book, the sport industry has worked to promote awareness of ecological issues, induce positive behavior change, and call others to action in the struggle to safeguard the natural environment. Through STOKE Certified, the global surf industry can make the sport more accessible while enabling environmental protections (as discussed by O'Brien and Ponting in Ch. 23, this volume). Community programming (Book, Ch. 28, this volume) and outdoor and adventure sports (Sharma-Brymer, Gray, & Brymer, Ch. 25, this volume) have been used to strengthen individuals' connection to the natural environment. Professional teams are working with stakeholders to co-create environmental strategies that serve their local community (Heinze & Soderstrom, Ch. 20, this volume). Organizations have developed innovative marketing strategies to promote sustainability initiatives on their own and with like-minded sponsors (Cornwell & Koenigstorfer, Ch. 12, this volume; Edwards, Ch. 13, this volume; Weiler & Weiler, Ch. 14, this volume; Bodie & Johnson, Ch. 32, this volume). International governing bodies like the International Olympic Committee (IOC) and Fédération Internationale de Football Association (FIFA) have implemented benchmarks to reduce the environmental impact of their events, and researchers have devised new metrics to independently assess the effectiveness of those benchmarks (Collins & Roberts, Ch. 15, this volume).

Now that the environmental movement has a firm footing within the sport industry, we can look beyond the traditional – yet still essential – concerns of consumer awareness and building design to issues such as tailgating behaviors (Gillentine, Ch. 21, this volume) and emissions (Casper & Bunds, Ch. 22, this volume), anthroparchy (Sartore-Baldwin, Ch. 26, this volume), water usage (Bunds, Ch. 27, this volume), and sustainable practices in athletic training (Potteiger, Ch. 19, this volume). Additionally, to continue growth in the sustainability space, both academy and industry must endeavor to enhance the general proficiency, technical expertise, and communication skills of its students and practitioners (Dingle & Mallen, Ch. 6, this volume; Stevens, Ch. 7, this volume; Pfahl, Ch. 9, this volume).

Although there is reason to celebrate the significant pro-environmental advances made within sport, acclaim of the industry's best practices should be complemented by constructive critical analysis (Coakley, 2015). Similarly, unrelenting idealism must be tempered by the current social, economic, and political realities that could impede progress. In other words, to advance environmental sustainability in any meaningful way, we must acknowledge – and then confront – the long road ahead.

The spectacle of environmental sustainability in sport

Without question, over the past decade, the sport industry has undergone a profound environmental transformation. Stadiums like the Atlanta Falcons' Mercedes-Benz Stadium (Figure 34.1) and mega-events like the Olympic and Paralympic Games are greener than ever (Kellison, 2015; Mercedes-Benz Stadium, 2016). A growing number of teams, leagues, and governing bodies promote eco-friendly initiatives (Wall-Tweedie & Nguyen, 2016). More and more athletes and



Figure 34.1 Mercedes-Benz Stadium in Atlanta, Georgia, pictured under construction in 2016. The new home to the Atlanta Falcons NFL team replaced the Georgia Dome, pictured in the foreground

Source: Timothy Kellison, republished with permission

front-office executives are engaging in environmental activism (Pfahl, 2013). Fans are increasingly being exposed to pro-environmental messaging with the hope that it will induce positive behavioral change (Casper, Pfahl, & McCullough, 2014). Among the most illustrative markers of pro-environmental momentum is the dramatic growth of the Green Sports Alliance (GSA): five years after its launch as a network of six professional teams and five sport venues, it had swelled to more than 375 members, including over 350 teams and venues and 15 leagues (Green Sports Alliance, 2016). Its resource guides – the topics of which range from operations and sustainable design to food sourcing and green cleaning – are required reading for environmentally conscientious sport managers, and its annual summit features some of the industry’s most influential decision makers.

These are just a few of the numerous examples that might lead one to adopt an optimistic outlook on the future of sustainability in sport. However, a more critical examination of recent environmental progress in the sport industry reveals that despite advances in some sectors, other areas lag behind. For example, since 2005, more than 40 major stadium constructions or renovations occurred across MLB, MLS, the NBA, the NFL, and the NHL; of those, however, only 10 have received some level of LEED certification (about another dozen stadiums built before 2005 have been LEED certified) (see Table 34.1). So, although North American sports leagues are experiencing a stadium boom, those facilities with comprehensive sustainable designs remain atypical.

Table 34.1 Major sports facility openings with vs. without LEED certification, 2005–2016

League	Stadiums Opened ^a	LEED Certifications	% of Facilities with LEED Certification
MLB	8	3	37.5
MLS	14	2	14.3
NBA ^b	5	3	60
NFL	14	1	7.1
NHL ^b	4	2	50
Total	45	10	22.2

Note. From “Major LEED-Certified Sports Facilities, Since LEED Inception,” by Sport and Urban Policy Initiative, 2016.

a Includes both new and renovated stadiums (i.e., MLB = 6 + 2; MLS = 12 + 2; NBA = 4 + 1; NFL = 6 + 8; NHL = 4 + 0). ^bBarclays Center cross-listed with both NBA and NHL.

The environmental cost of facility construction is another aspect of the most recent stadium boom worthy of consideration. The transportation of heavy machinery and equipment across far distances, the sourcing and manufacturing of building materials, and the decommissioning and demolition of preceding stadiums have enormous environmental impacts. These impacts become more pronounced as facility lifespans shorten (McLeod & Holden, Ch. 33, this volume). For example, in late 2013, the Atlanta Braves announced their intention to develop and construct a new \$672 million ballpark in suburban Cobb County. The stadium, SunTrust Park, opened approximately 15 miles northwest of the team’s previous downtown location in 2017. Although the public–private ballpark initiative received widespread support from Cobb policy makers, the decision to relocate from downtown Atlanta to a suburban location was not without controversy. In addition to concerns that the decision-making process lacked transparency, some Atlantans expressed disappointment in the team’s relocation to a suburb from Turner Field, a stadium originally constructed in the heart of the city for the 1996 Centennial Olympic Games and less than 20 years old at the time of the Braves’ announcement (Tierney, 2014). The Georgia Sierra Club outlined a series of additional reasons for opposing the stadium, including:

- the county’s decision to redirect funds away from public parks and green spaces in order to finance the stadium project;
- the lack of walkability around the stadium’s expansive footprint;
- and the lack of access to public rail (Sierra Club, 2013).

In the years between the initial announcement and the opening of SunTrust Park, few details emerged regarding any plans for promoting environmental initiatives at the new stadium, adding to the skepticism raised by the Sierra Club and prompting green sports blogger Lew Blaustein to award it the “Least Green New Stadium Project” in 2014 (Blaustein, 2014).

The Atlanta Braves and SunTrust Park are both GSA members. Although it is possible that both have sustainability initiatives (current or planned), it is unlikely that such initiatives would mitigate the full environmental harms caused by the new ballpark development. In order to gain membership in the alliance, organizations must (1) pay a \$500 to \$2,500 annual fee and (2) pledge to measure environmental performance, identify initiatives that can reduce their environmental impact, and evaluate the effectiveness of those initiatives. It is unclear if the GSA conducts membership audits to hold its members accountable to the pledge. However, given the sheer number of organizations associated with the GSA and the lack of pro-environmental programming promotion among many of those members, there is a high likelihood that some

members – eager to portray themselves as socially responsible organizations (Rosenberg, ch. 4, this volume; Johnson & Ali, ch. 24, this volume) – are strategically aligning themselves with the GSA. Still, this relationship may be mutually beneficial, as the GSA can show growth in the sustainability movement and grow its operations because of revenues generated from membership fees.

A few sport organizations have emerged as leaders in implementing pro-environmental strategies, including some who acted as innovators and early adopters long before sustainability had emerged as a pressing issue in sport (Kellison & Hong, 2015). For the majority of organizations, however, who implemented eco-friendly initiatives much later, the motives for adopting a pro-environmental perspective may range from altruism to the desire for cost savings, positive public relations, or new sponsorship opportunities (“Taking Root,” 2016). On the other hand, teams face a number of barriers to pro-environmental action, including upfront costs, inertia within the organization, insufficient cost savings, and lack of interest from fans, upper management, or sponsors (“Taking Root,” 2016; Trendafilova, Kellison, & Spearman, 2014). These disincentives – whether real or imagined – are significant, and they will continue to dissuade some organizations from making changes to reduce their environmental impacts. Additionally, due to a mix of legal, social, and economic factors, sustainability is not a central concern for many sport organizations located in the developing states and emerging economies that are home to some of the populations who stand to be most negatively affected by environmental degradation. As discussed later, there are ways to overcome these constraints, but to do so will require the intervention of a wide range of influential actors, including major sporting leagues and international sport governing bodies, government at all levels, and ordinary citizens.

The necessity of political climate change

An already uncertain future feels even more indeterminate amid significant changes in U.S. leadership, a global population that continues to grow, and the specter of civil and political unrest around the world. Although the science of climate change was already politicized before the 2016 U.S. election cycle, there are newfound fears that some of the most important environmental legislation enacted over the past several decades will be repealed, including the historic Paris Agreement, drafted at the 2015 UN Framework Convention on Climate Change (also known as the 21st Conference of Parties, or COP21) that came into force in October 2016 (European Commission, 2016; see also Porteshawver’s and Geereart’s summaries of other environmental legislation currently impacting sport in Chs. 29 and 30, respectively). As part of the COP21 events (Figure 34.2), the GSA convened several panels to “use the visibility of sports to reach out to millions of fans and businesses, urging us all to take action, and to recognize that we are one team, one planet, and that climate change is not a game” (Hershkowitz, 2015b, para. 2). For any state (particularly one like the United States or China that produces substantial carbon emissions) to abandon the Paris Agreement could set into motion the treaty’s undoing. In the week that followed the election of Donald Trump, more than 300 businesses and investors sent an open letter to U.S. and international leaders, including Obama and Trump. The letter, signed by leading executives from Nike, Patagonia, The North Face, and Clif Bar, emphasized the business community’s support of the Paris Agreement (“Business Backs Low-carbon USA,” 2016).

Despite the possibility that pro-environmental legislation may be reversed at local, state/provincial, federal, or international levels, some industry leaders have argued that such changes would only minimally affect efforts to expand sustainability in sport (e.g., Blaustein, 2016). Additionally, Allen Hershkowitz, co-founder and former president of the GSA, contended that



Figure 34.2 Eiffel Tower during the COP21 meeting in Paris in 2015. The “100% Citoyennes” (100% Citizens) reference is part of Naziha Mestaoui’s *1 Heart 1 Tree* art installation, which called for a global transition to 100% renewable energy. (“Tour Eiffel à Paris” by Yann Caradec is licensed under CC BY-SA 2.0.)

the presence of eco-friendly initiatives in the sports industry illustrates that companies can still prioritize environmental protection without a legal mandate:

There is no law in North America requiring [that] sports leagues, teams or venues carry out the good environmental work they are doing. And because there is no law, too many companies and most governments have not taken the significant steps needed to slow global warming. This is why the sports industry's work to protect the environment is so important. And what the sports industry does is noticed, and it is noticed globally.

(Hershkowitz, 2015a, p. 29)

Although it is true that the pioneers of sport sustainability – individuals like Hershkowitz, organizations like the Seattle Mariners, and facilities like Lincoln Financial Field – were called to action for other reasons, mandates coming from a league office or international governing body would undoubtedly nudge the industry toward a widespread and comprehensive environmental transformation. In other words, in order to push sport organizations toward the adoption of large-scale environmental initiatives (as opposed to typical “fan awareness” campaigns and green sponsorships), advocates must pressure sports institutions and governments to enact laws that require an appropriately high level of environmental management for sports facilities and event operations (e.g., McCullough & Cunningham, 2010).

Environmental mandates have already been put in place by the IOC. Although well intentioned, they have come with mixed results, as detailed in several chapters (see, for example, discussion of the IOC mandates by Theodoraki in Ch. 18, this volume and Girginov in Ch. 31, this volume). Clearly, the IOC's requirement that bidding cities develop comprehensive environmental management plans has helped to reduce the potential impact of these mega-events. However, as noted by Lesjø and Gulbrandsen (Ch. 8, this volume), the mere presence of the IOC bid mandate does not guarantee the successful implementation of pro-environmental initiatives. Furthermore, given the desire of Olympics organizers to showcase innovation and leave a lasting legacy on the host city (see Kaplanidou's summary of environmental legacy in Ch. 17, this volume), planners may overpromise or poorly execute. For example, in 2012, Olympic Stadium represented the crown jewel of London's environmental legacy plan: the £429 million stadium was designed to hold 80,000 spectators for the Olympic and Paralympic Games before being deconstructed and reconfigured into a more utilizable 60,000-seat football ground. After the additional £323 million conversion, London Stadium reopened in 2015 as the home of West Ham United FC (Figure 34.3) (Gibson, 2016). Since its reopening, the design of the stadium has been blamed for clashes between club supporters and, more generally, a poor spectator experience. In an interview with *The Mail on Sunday*, Paul Fletcher, a consultant who assisted with the original design of the stadium, argued that it should be demolished and rebuilt:

I did advise that West Ham and other football experts should have been brought in from the outset to help design the stands for football use, but this fell on deaf ears. It is a botched job and won't work now or in 30 years' time.

This is what happens when politicians and bureaucrats get involved in professional sport. Instead of leaving West Ham a thoroughbred stadium, the legacy is that they have been left a donkey. The only way to get it right is to knock it down and rebuild it. There is no magic wand.

(Fletcher, as quoted in Gibson, 2016, paras. 15–16)



Figure 34.3 London Stadium (née Olympic Stadium), home of West Ham United Football Club, in 2016
Source: Mark Hirst, republished with permission

In Fletcher's view, mandates originating from legislators or governing bodies may be too heavy-handed and can result in costly mistakes. In other cases, they may be seen as impractical and lead organizations to find ways to circumvent legal requirements, such as when a proposed stadium project is required to complete a time-consuming environmental impact assessment review (e.g., Kellison & Mondello, 2013).

In North America, professional sports leagues have actively promoted league-wide sustainability campaigns and celebrated the environmental successes of their clubs, but they have largely avoided substantive conversations about how to effectively manage environmental operations at the team level without negatively impacting their clubs' business interests. As noted earlier, only a small fraction of the more than 40 stadiums built or renovated in the past 10 years have obtained LEED certification. One might ask what has stopped major professional sporting leagues with teams operating their own facilities (e.g., CFL, MLB, MLS, NBA, NFL, NHL) from requiring that all major stadium projects meet or exceed basic LEED-certification standards. Team owners do have significant power they could employ to oppose such a mandate if they wanted to. Still, there are reasons to believe a league-wide mandate could work. First, league offices already have some authority over their clubs' facility operations; for example, the NHL "requires all of its arenas to donate post-game uneaten food to charities" (Hershkowitz, 2016, p. 20). Second, when it comes to financing new stadium projects, most leagues offer internal loan programs, the NFL's G-3 and G-4 credit facility being the most widely documented (Greenberg & Gavin, 2016). In order to qualify for the G-4 program, teams must adhere to a series of guidelines. Requiring that new facilities meet specific environmental standards would require a renegotiation of the

league's collective bargaining agreement, but its successful ratification would lead to sustainable design becoming commonplace in professional sport. Had 45 stadiums been LEED certified in the past decade (compared to just 10), the implications for both the environmental movement and the sports industry would be unmistakably historic.

Even in the absence of mandates enforced by leagues and governing bodies, local governments could enact their own legislation. Since 2005, taxpayers in North America have contributed more than \$11.5 billion toward professional stadium projects (Sport and Urban Policy Initiative, 2016b). Passing citizen initiatives that tie public funding to sustainable facility designs would all but guarantee the mainstreaming of sustainability in sport. Indeed, cities like Portland, San Francisco, and San Jose all require buildings of certain sizes to be built to LEED standards (Kok & Holtermans, 2015). At the university level, the University of Colorado Boulder is known for having "one of the most diverse and effective collegiate sports greening programs in the United States" (Henly, 2013, p. 22). The CU campus has at least six LEED Platinum and 11 LEED Gold buildings, and while a forward-thinking administration has played an important role in promoting green building, much of the credit can be given to the university's environmental policy that all new constructions or major renovations obtain LEED certification, a mandate initiated by students (University of Colorado Boulder, n.d.). On the other end of the spectrum, some states have taken action to prohibit the pursuit of certain types of green building certification in new buildings constructed using public money (Badger, 2013). As noted by Fink (2013), Georgia, Alabama, Maine, and Ohio have all instituted bans because of disagreement over how local wood sourcing should be credited by certification systems like LEED.

Rather than convincing team owners and sport managers that instituting environmental initiatives would be economically viable or is morally imperative, legislative intervention would provide a clear path to normalizing sustainability in sport. Outside of sport, there is some confidence that investment in clean energy and emissions reductions will flourish in the private sector (Obama, 2017), and similarly, some leaders in sport have argued that environmental sustainability can thrive *despite* a reluctant, skeptical, or even eco-unfriendly legislature. This contention assumes that sport governing bodies, organizations, coaches and athletes, and fans consider the environment a critical issue requiring their immediate and constant attention. But whereas consumers and sponsors have certainly shown increasing interest in eco-friendly products and businesses (as discussed by Trail and McCullough in Ch. 10, this volume and Huberty in Ch. 11, this volume), there is no evidence to suggest that organizations less active on the environmental front have experienced lower attendance or sponsorship opportunities. For that reason, sports organizations continue to engage in environmental initiatives haphazardly.

In conclusion

There is now a firm foundation of research on sport and sustainability, much of it produced by the contributors of this handbook. Although continued academic inquiry is necessary (Mallen, Ch. 2, this volume; Anderson & Shaikh, Ch. 3, this volume), further significant change will also require governmental policy making or sport organizations' development of commitments to environmental sustainability (whether for financial or moral reasons). Some leaders in the industry, ranging from governing bodies and teams to administrators and athletes, have already made such commitments. The charge for those interested in mainstreaming environmental sustainability is to press the many organizations that have committed either halfheartedly or not at all. Moving forward, these unengaged organizations must be nudged through economic incentives, social pressures, or legal mandates. Until then, the promise of sport as a powerful vehicle for environmental change will remain unfulfilled.

References

- Badger, E. (2013, August 28). Why are some states trying to ban LEED building standards? *CityLab*. Retrieved from www.citylab.com/design/2013/08/why-are-some-states-trying-ban-leed-green-building-standards/6691/
- Blaustein, L. (2014). *Best and worst of green sports, 2014* [Blog post]. Retrieved from <https://greensportsblog.com/2014/12/23/best-and-worst-of-green-sports-2014/>
- Blaustein, L. (2016). *More green-sports optimism post Trump election* [Blog post]. Retrieved from <https://greensportsblog.com/2016/11/11/more-green-sports-optimism-post-trump-election-dave-newport-cu-boulder-environmental-center-director/?platform=hootsuite>
- Business backs low-carbon USA*. (2016). [Press release]. Retrieved from www.lowcarbonusa.org/
- Casper, J. M., Pfahl, M. E., & McCullough, B. (2014). Intercollegiate sport and the environment: Examining fan engagement based on athletics department sustainability efforts. *Journal of Issues in Intercollegiate Athletics*, 7, 65–91.
- Coakley, J. (2015). Assessing the sociology of sport: On cultural sensibilities and the great sport myth. *International Review for the Sociology of Sport*, 50(4–5), 402–406. doi:10.1177/1012690214538864
- Davenport, C. (2016, November 11). Climate policy faces reversal by new leader. *The New York Times*, p.A1.
- European Commission. (2016). *Paris Agreement to enter into force as EU agrees ratification* [Press release]. Retrieved from http://europa.eu/rapid/press-release_IP-16-3284_en.htm
- Fink, K. (2013, September 30). LEED outlawed: Three states with bans. *Poplar Network*. Retrieved from www.poplarnetwork.com/news/leed-outlawed-three-states-bans
- Fountain, H. (2016, November 12). A climate contrarian will shape energy policy in new administration. *The New York Times*, p.A10.
- Francis. (2015). *Laudato si': On care for our common home*. Vatican City: Vatican Press.
- Gibson, O. (2016, November 2). West Ham's Olympic Stadium deal explained: From Water City to the London Stadium. *The Guardian*. Retrieved from www.theguardian.com/sport/blog/2016/nov/02/west-ham-olympic-stadium-deal-explained-london-mayor-sadiq-khan
- Greenberg, M. J., & Gavin, M. R. (2016). *NFL G-3 and G-4 credit facility has made possible new state-of-the-art stadiums*. Retrieved from www.greenberglawoffice.com/nfl-credit-facility-has-made-possible-new-state-of-the-art-stadiums/
- Green Sports Alliance. (2016). *About the Green Sports Alliance*. Retrieved from <http://greensportsalliance.org/about/>
- Henly, A. (2013). *Collegiate game changers: How campus sport is going green (13–08-A)*. New York, NY: National Resources Defense Council.
- Hershkowitz, A. (2015a, June 29). How sports can shift attitudes toward global sustainability. *SportsBusiness Journal*, 25.
- Hershkowitz, A. (2015b). *The sports industry at the Paris climate talks* [Press release]. Retrieved from <http://greensportsalliance.org/the-sports-industry-at-the-paris-climate-talks/>
- Hershkowitz, A. (2016, June 6). Environmentalism in sports: Still more to do. *SportsBusiness Journal*, 20.
- Kellison, T. B. (2015). Building sport's green houses: Issues in sustainable facility management. In J. Casper & M. E. Pfahl (Eds.), *Sport management and the natural environment: Theory and practice* (pp. 218–237). New York, NY: Routledge.
- Kellison, T. B., & Hong, S. (2015). The adoption and diffusion of pro-environmental stadium design. *European Sport Management Quarterly*, 15(2), 249–269.
- Kellison, T. B., & McCullough, B. P. (2016). A forecast for the mainstreaming of environmental sustainability. *Sport & Entertainment Review*, 2(1), 11–18.
- Kellison, T. B., & Mondello, M. J. (2013). In the continued pursuit of stadium initiatives following past failures: An analysis of the Los Angeles Farmers Field proposal. *Journal of Venue & Event Management*, 4(2), 36–46.
- Kellison, T. B., Trendafilova, S., & McCullough, B. P. (2015). Considering the social impact of sustainable stadium design. *International Journal of Event Management Research*, 10(1), 63–83.
- Kok, N., & Holtermans, R. (2015). *National green building adoption index 2015*. CBRE: Los Angeles.

- McCullough, B. P., & Cunningham, G. B. (2010). A conceptual model to understand the impetus to engage in and the expected organizational outcomes of green initiatives. *Quest*, 62(4), 348–363.
- McCullough, B. P., Pfahl, M. E., & Nguyen, S. N. (2016). The green waves of environmental sustainability in sport. *Sport in Society*, 19(7), 1040–1065. doi:10.1080/17430437.2015.1096251
- Mercedes-Benz Stadium. (2016). *Sustainability*. Retrieved from <http://mercedesbenzstadium.com/stadium-info/sustainability/>
- Obama, B. (2016). [Letter outlining new actions to promote sustainability through sport]. Retrieved from www.whitehouse.gov/blog/2016/10/06/new-actions-tackle-climate-through-sports
- Obama, B. (2017). The irreversible momentum of clean energy. *Science*, 355(6321), 126–129.
- Pfahl, M. (2013). The environmental awakening in sport. *The Solutions Journal*, 4(3), 67–76.
- Sierra Club. (2013). *Georgia Sierra Club opposes Cobb public funding for Braves move* [Press release]. Retrieved from <http://content.sierraclub.org/press-releases/2013/11/georgia-sierra-club-opposes-cobb-public-funding-braves-move>
- Sport and Urban Policy Initiative. (2016a). *Greentrack*. Retrieved from www.stadiatrack.org/green
- Sport and Urban Policy Initiative. (2016b). *Publictrack*. Retrieved from www.stadiatrack.org/public
- Taking root. (2016, June 6–12). *SportsBusiness Journal*, 15–21.
- Tierney, M. (2014, September 17). To mixed reaction, Braves begin work on stadium outside downtown. *The New York Times*, p. B14.
- Trendafilova, S., Kellison, T. B., & Spearman, L. (2014). Environmental sustainability in sport facilities in East Tennessee. *Journal of Facility Planning, Design, and Management*, 2(1), 1–10.
- Trump, D. J. [realDonaldTrump]. (2012, November 6). *The concept of global warming was created by and for the Chinese in order to make U.S. manufacturing non-competitive* [Tweet]. Retrieved from <https://twitter.com/realDonaldTrump/status/265895292191248385>
- Trump, D. J. [realDonaldTrump]. (2013, December 28). *We should be focused on clean and beautiful air – not expensive and business closing GLOBAL WARMING – a total hoax* [Tweet]. Retrieved from <https://twitter.com/realDonaldTrump/status/416909004984844288>
- Trump, D. J. [realDonaldTrump]. (2014, January 1). *This very expensive GLOBAL WARMING bullshit has got to stop. Our planet is freezing, record low temps, and our GW scientists are stuck in ice* [Tweet]. Retrieved from <https://twitter.com/realDonaldTrump/status/418542137899491328>
- University of Colorado Boulder. (n.d.). *LEED certified green buildings at CU-Boulder*. Retrieved from www.colorado.edu/fmgreen/leed-certified-green-buildings-cu-boulder
- Wall-Tweedie, J., & Nguyen, S. N. (2016). Is the grass greener on the other side? A review of the Asia-Pacific sport industry's environmental sustainability practices. *Journal of Business Ethics*. Advance online publication. doi:10.1007/s10551-016-3320-6
- The White House. (2016). *Fact sheet: Tackling climate through sports* [Press release]. Retrieved from www.whitehouse.gov/the-press-office/2016/10/06/fact-sheet-tackling-climate-through-sports

INDEX

- Abel, A. 303
Abel, T. D. 138
Academy of Management Journal 180
accountancy, environmental 221–2
action stage of change 260
Adams, L. 19, 26, 80
affordances 331–2
Agha, N. 15
Aguinis, H. 180
Ahonen, A. 405–6
air pollution: health effects of 254–5, 292;
 methods for measuring 293–5; tailgating and
 280, 284, 291–9
Ajzen, I. 137–8
Alders, T. 235
Alison Gannett 336
Alley, K. 101
Alliance for Water Efficiency 353, 357
Ameer, P. 150
Americans with Disabilities Act (ADA) 278
Andamon, M. 81, 90
Anderson, Chris 200
Anderson, D. 157
animal standpoint theory (AST) 343–7
Anthony, Kathryn 352
anthroparchy 342–3, 344–7
anthropocentrism 58, 80
Apostolis, N. 14, 81
Aristotle 242, 244
Armstrong, G. 412
Asian Journal of Sports Medicine 31
Aspinall, P. 335
aspirational position 112
aspirational talk 113
Association of Tennis Professionals (ATP) 48
Atha, W. 31
athletic training operations 253; and effects of
 waste on health of the environment 253–5;
 motivators and barriers for change in 257–8;
 opinion and knowledge among workers in
 256; stages of change model and 258–60;
 sustainability project ideas in 260–1; use of
 green techniques in 256–7; waste produced in
 255–6
Attitude-Behavior-Context model 137
autonomy of international sports
 organizations 399
Baade, R. A. 429
Babiak, K. 24–5, 30, 102, 302; on CSR
 rationale 125
Backer, T. E. 100
Bahr, R. 31
Baird, Bruce 323
Baker, T. 302
Baldwin, R. 31
Ballantyne, R. 336
Barbieri, C. 301–2, 306
Barone, M. 152
Barrett, M. J. 125
Bates, G. 31
Belz, F.-M. 137–8
Benn, S. 84
Bennett, G. 156
Benson, A. 17
Berger, P. 122–3
Best, S. 343, 348
Bettman, Gary 3
Bhattacharya, C. 124
biocentrism 58
biohazard waste and tailgating 283, 286–7
Bioregional 245

- Biotechnology for Biofuels* 31
 Birrell, C. 334
 Blackman, D. 17
 Blacksher, E. 369, 371
 Bobocel, D. R. 178
 Bocker, L. 30
 Bodie, M. 31
 Boulet, L. 67
 Bowen, Howard 112
 Boyko, C. T. 363
 Bradish, C. 152
 brand management 154
 Branvold, S. 122
 Breashears, David 334
British Journal of Sports Medicine 31
 Brocherie, F. 30–1
 Broom, D. 14, 29, 235
 Brown, Jerry 386
 Brown, T. 150
 Brownlee, E. 150
 Brundiers, K. 91
 Brundtland, Gro Harlem 113, 405
 Brundtland Report 5, 11, 55, 242, 405
 Brunsson, N. 110
 Bruzelius, N. 249
 Brymer, E. 22, 80
 Buckley, R. 304, 314
 Building Research Establishment Environmental Assessment Methodology (BREEAM) 226
 Buono, A. 103
 Burke, P. J. 138
 Bürki, R. 70
 Butt, T. 302
 Byrne, Z. S. 178

 California: environmental review in 380–5; state leadership in “greening” 385–6
 California Air Resources Board (CARB) 385
 California Environmental Quality Act (CEQA) 380–3
 California Global Warming Solutions Act of 2006 385
 California Renewables Portfolio Standard (RPS) 385
 Calvo, E. 343
 campaign architecture, marketing 146
 Cantelon, H. 114, 321, 407
 capacity 99; future research and conclusion 105–6; perspectives overview 100–1; sport, environmental sustainability, and 101–3
 capitalism, natural 80
 CAPTEN system 294–5, 297
 Carroll, A. B. 180
 Carter, Christie 311
 Casper, J. 15, 25, 29–30, 81, 233; on green games influence 135, 185; interspecies equity and 348; on pro-environmental belief and action 126
 Casper, M. 22
 Castellanos, P. 30
 cause-related marketing (CRM) 150–2; finding the right sponsor and 152–3; social identity theory and 157
 Cavill, N. 371
 Cecil, L. 320
 Center for Clean Air Policy 359
 certifications, environmental 220–1; accountancy, measurement, and accreditation in 221–2; building certifications 226–8; existing standards 223–31; Kaizen training and 229–31; management and operations 224–6; opportunities 222–3; other rating systems 229; tourism accreditation and 304–14
 Chadwick, S. 155
 Chaffee, C. 433–4
 Chalip, L. 283
 Chalkley, B. 408
 Chang, E. 20, 29
 change, stages of 258–60
 Chard, C. 17, 19, 25–6, 28, 152, 429
 Chavanat, N. 156
 Chen, M. 184
 Chernushenko, D. 6
 Chevront, S. 31
 Chevrolet 151
 Cho, C. 156
 Christensen, L. T. 112, 117
 Clarke, T. 103, 106
 Clay, J. 162
 Clegg, S. 103, 106
Climate 30
 climate action plan (CAPs) 386–7
 climate change 66; future Olympic and Paralympic cities and 70–5; impacts, preparation for 389; sports and 67–70; sports-environment interactions and 66–7
Climate Law 31
Climate Research 30
 Clooney, George 39
 Coaffee, J. 412
 Coalition for Environmentally Responsible Economies (CERES) 229
 coastal tourism 304
 cockfighting 346
 Coenders, G. 304
 Cohen, P. 412
 Cole, C. 22
 college athletics and economics of sports 49–50
 Collins, A. 291, 322–3, 433
Commercial Architecture 354
 Commission for a Sustainable London (CSL) 241, 248–50, 412

- communication content and platforms 127–8
 Communications Strategy Wheel (CSW) 135–6
 community choice energy (CCE) 388
 complex adaptive systems (CAS) 89
 Comprehensive Assessment System for Built Environment Efficiency (CASBEE) 229
 Conca, K. 406
 congruency theory 156–7
 Connaughton, D. 18–19, 29, 234
 Constraint Theory 137
 contemplation 259
 Cooper, R. 363
 Coops, N. C. 91
 Copeland, R. 155
 Córdoba, J. 89
 corporate social responsibility (CSR) 176;
 employee responses to socially responsible activities targeted toward a variety of stakeholders 180–1; future directions for research 186–7; greenwashing and 321; impact of sport sponsorship 184–5; importance of 176–83; initiatives resulting in socially responsible employee behaviors 179–80; possible employee responses to 177; possible triggers of employee responses to 178–9; sports sponsorship as a form of investment in 183–6; what psychological processes triggered in response to 181–3
Corporate Social Responsibility and Environmental Management 30
 corporate sustainability and the Olympic Movement 111–13
 Council for Responsible Sport (CRS) 229
 countermeasure, environmental operational 27
 Cropanzano, R. 178, 180
 Cudworth, E. 342–3, 345
 Cunningham, G. 19, 29, 103–4
Current Issues in Tourism 30
 Curry, P. 58
 cycling 211–17

 Daly, H. E. 430, 434
 dark green ethics 58–9, 319–20
 da Silva, F. N. 405
 Date of Ecological Maturity (DEM) 430, 434–7;
 as policy tool 437–9
 Davis, A. 370
 Dawson, J. 30
 Death, C. 30
 de Coubertin, Pierre 409
 Deer Unlimited 4
 DeJardins, J. 62
 D'Elia, K. 17–18
 deontic motive theory 179
 Desbordes, M. 13
 Devane, T. 106

 Dew Action Sports Tour 156
 Dickinson, Mary Ann 357
 Dickson, T. 17
 Dietz, T. 138
 diffusion 113–14
 Dijst, M. 30
 Dingle, G. 27, 81
 direct private return 43
 Dittmore, S. 122
 Djaballah, M. 13
 dog fighting 346
 dog racing 345–6
 Doherty, A. 101
 Dolf, M. 27–8
 Dolles, H. 101
 Dolnicar, S. 306, 310
 Downey, G. 22
 Dresner, S. 405
 Du, S. 124
 Ducks Unlimited 4
 Dukerich, J. M. 178
 Dunphy, A. P. 84
 Dutton, J. E. 178
 Dye, R. F. 429

 Earnshaw, G. I. 341–2
 Eaton, J. 156
 Ebell, Myron 445
 Ebrahim, A. 105
 eco-centric ethics 58–9
 ecocentrism 80
 ecological dynamics: environmental identity and 331–2; outdoor and adventure sport (OAS) and 335–7
 ecological economics and throughputs of matter and energy 430–4
 ecological footprint (EF) 210, 212–13
 economic rent 51n3
 economics, environmental 41–2
 economics of sports 36, 38–9, 50; automobile racing and 47; college athletics and 49–50; demographic considerations in 40–1; individual sports and associations and 47–9; interactions of sports, economics and the environment in 42–50; major event impacts 208–9, 212; marketing considerations in 39–40; National Football League and 46; Olympic Games and 44–6; principles of economics and 36–8
 education, sport-environmental sustainability 79–80, 91–2; advances in 81–2; advocacy for 86; background to 80–2; conceptualizing teaching of 87; faculty-level challenge for integrating 90; foundational steps in 82–4; integrated across the curriculum 90–1; literature on 80–1; pedagogical approaches for 84–91; situated within wider perspectives of

- knowledge and reality 85–6; standalone courses 84–5; what should be taught in 87–90; where to start with 85
- Education for Sustainability (EfS)* 80
- Education for Sustainable Development (ESD)* 80
- Edwards, M. R. 181, 183–4, 186
- Edwards, P. 372
- Elenkov, D. 103
- Ellis, S. 91
- Emergency Medicine Clinics of North America* 31
- Energy and Environmental Science* 31
- energy conservation ordinances 387–8
- energy consumption and tailgating 281
- Energy Conversion and Management* 31
- Energy for Sustainable Development* 31
- environmental certifications 220–1; accountancy, measurement, and accreditation in 221–2; building certifications 226–8; existing standards 223–31; Kaizen training and 229–31; management and operations 224–6; opportunities 222–3; other rating systems 229; tourism accreditation and 304–14
- environmental costs of tailgating 279–83
- environmental degradation and tailgating 282
- environmental economics 41–2
- environmental identity 330, 337; creating 330–1; ecological dynamics and 331–2; growing importance of OAS in creating deeper 333–5; traditional sport and 332–3
- environmental impact of sport events 207–9, 217–18; ecological footprint (EF) 210, 212–13; economic impact and 208–9, 212; environmental input-output analysis (ENVIO) 210–11, 212–13; FA Cup Final 211–17; results summary 213–17; Rugby 6 Nations (R6N) 211–17; Tour de France Le Grande Départ 211–17; visitor surveys 213
- Environmental Innovations and Societal Transitions* 31
- environmental input-output analysis (ENVIO) 210–13
- Environmental Institute of Golf (EIFG) 48, 357
- environmental management performance: environmental activities in stakeholder disclosure and relationships and 23–7; environmental operational countermeasures and 27; environmental tracking and 27–8; introduction to environmental sustainability and 12–23
- environmental movement, birth of modern 36
- environmental operational countermeasures 27
- environmental operational management 28
- environmental policy integration (EPI) 406–7; barriers 398–400; at the EU level 394–5; in EU sports policy 395–8
- Environmental Protection Agency (EPA) 61, 68, 222–3, 419, 445
- environmental review and sustainable stadiums 380–5; energy conservation ordinances and 387–8
- environmental sustainability in sport 62–3; animal standpoint theory and 343–7; capacity and 101–6; characterization of 55–7; debate over 404–6; effects of waste on health of the environment and 253–5; equity-based 341–2; ethical grounds for 57–9; framing 5–6; governance as fourth pillar of 406–7; integrated approach to 6–8; literature on introduction to 12–23; micro-macro linking and 162; necessity of political climate change and 449–53; Olympic Games and 4–5, 407–9; philosophical origins of 80; pragmatic perspective on future of 445–53; and relationship between sport and the environment 3–4, 59–62; spectacle of 446–9
- Environmental Sustainability Report, NHL* 3
- environmental tracking 27–8
- equity-based sustainability 341–2
- Esparon, M. 304
- Essex, S. 408
- ethics 54–5; grounds for environmental sustainability 57–9
- EU Ecolabel Award Scheme 395, 397
- EU Eco-Management and Audit Scheme 395–6
- European Sport Management Quarterly* 11, 28
- European Union (EU) 393–4; barriers to integrating environmental objectives in sports policy 398–400; environmental policy integration at the EU level 394–5; environmental policy integration in EU sports policy 395–8; recommendations on the environmental sustainability of major sport events 397–8
- Event Management: An International Journal* 11, 28
- exchange theory 155–6
- extreme weather events and health 254
- Fairley, S. 13, 15, 17–18, 81
- Fanning, M. 302
- Farrelly, F. 155
- Federal of the European Sporting Goods Industry (FESI) 408
- Fédération Internationale de Football Association (FIFA) 69, 101–2, 104; sponsorships 151, 156
- FedEx 151
- Feldman, S. 150
- Ferlie, E. 103
- Ferrand, A. 156
- Ferreira, M. 157
- Fifth Assessment Report* 70–1
- Findeisen, D. 311
- Finger, M. 406
- Fish, Dylan 312–13
- Fletcher, Paul 451–2

- Fluker, M. R. 306
 Flybjerg, B. 241–2, 244, 249, 411
 Flynn, A. 291
 food and drink industry 161–2, 173, 346;
 characteristics of the sport event and 170;
 characteristics of the sport event marketplace
 and 167–70; influence of sponsors on
 sustainable food and drink choices of sport
 spectators and 170–3; model development
 165–73; sector sustainability 163–4; sourcing
 268–9; sponsors in sports 164–5; understanding
 sport spectators and their individual
 decision-making processes 165–6; water use 353
 Food and Drug Administration (FDA) 164
 Football Association Challenge Cup 211–17
 Foster, Arian 347
 Foster, J. 359
 Foster, S. 364
 Fraguell, R. M. 304
 framing of environmental sustainability 5–6
 Francis, J. 364
 Frohlich, D. 30
 Fussey, P. 412
Future We Want, The 56
- Gardner, R. 246
 Georgescu-Roegen, N. 430, 432, 434
 Gibson, H. 15, 25
 Gibson, O. 451
 Gibson, R. 406
 Giles-Corti, B. 364
 Gillette Co. 185
 Girard, O. 30–1
 Gladden, J. 151
 Glavas, A. 180
 Glennon, R. 355
 Global Footprint Network 433
*Global Journal on Advances in Pure & Applied
 Sciences* 30
 Global Reporting Initiative (GRI) 229, 243–5
 Global Sustainable Tourism Council (GSTC) 309
 Gold, M. M. 238
 Gold, R. J. 238
 golf: course water use 352–3, 356–8; economics
 of sports and 47–8; ethics of environmental
 sustainability and 61
 Golf Course Superintendents Association of
 America (GCSAA) 48, 356
 Golf Environment Organization (GEO) 48, 229
 governance: as an exchange 410–11; of
 environmental policy in California 380–6;
 of environmental sustainability in the
 London Olympics 409–14; as fourth pillar
 of sustainability 406–7; policy instruments in
 413–14; steering process in 411–13
 Graeff, T. 152
- Gray, T. 22, 334
 green budgeting 395–6
Greenest City: Quick Start Recommendations 192
 Green Games 233, 323
 Greenhalgh, G. 126, 129
 greenhouse gases (GHGs) 68, 89, 197, 253;
 climate action plans (CAPs) and 386–7;
 environmental review and 379–80, 386;
 reducing transportation-related 389; tailgating
 and 280, 284–5
 greening 5–6
 green marketing trends 150
 green public procurement (GPP) 395–7
 Green Sports Alliance (GSA) 4, 268, 358, 418, 424,
 436, 447–9
 greenwashing 112, 320–1; future of 327–8;
 NASCAR and 324–5; National Hockey
 League and 326–7; the Olympics and 321–4;
 professional sport, periphery adjustments,
 and 324
 Greenwood, R. 103–4
 groundwater contamination and tailgating
 282, 286
 Guagnano, G. A. 138
 Guidi, G. C. 67
 Gwinner, K. 156
 Gyuris, E. 304
- Haack, P. 112
 Haaland, C. 363–4
 Hall, C. M. 408
 Hall, M. 15–16
 Hall, M. H. 100–1, 103
 Han, J. 30
 Hansen, Nick 352
 Harquail, C. V. 178
 Harris, R. 13
 Haughton, G. 341
 Hautbois, C. 13
 Hayes, G. 412–13
 Haymes, M. 31
 health 253–4; air pollution effects on 254–5, 292;
 extreme weather events and 254; heat effects
 on 254; infectious diseases and 255; nutritional
 issues and 255
*Healthy City is an Active City: A Physical Planning
 Guide, A* 372
 heat effects on health 254
 Heath, E. 27
 Heilbich, M. 30
 Heinze, K. 25, 125, 302
 Helixon, Lauren 273
 Henly, A. 271, 273
 Hensley, Zachary 271
 Hershkowitz, Allen 379, 451
 Hickenlooper, John 356

- Hinings, C. R. 103–4
 HM Treasury 245
 Hobbs, D. 412
 Hofman, P. S. 181
 Hollins, S.F.S. 234–5
 Hong, S. 23
 Hooper, P. 364
 Hoppe, R. 125
 Horne, J. 250, 412–13
 horse racing 345
 Hosany, S. 235
 Huberty, L. 150, 152, 154–5, 158
 Humpel, N. 370
 Hung, L. 184
 hunting 3–4, 346–7
 Husted, B. W. 112
 Hvenegaard, G. 18
 Hyatt, C. 25–6
- Ibrahimovic, Zlatan 368
 idea amplification 146
 identity, environmental 330, 337; creating 330–1;
 ecological dynamics and 331–2; growing
 importance of OAS in creating deeper 333–5;
 traditional sport and 332–3
 Identity Theory 137–8
 idling vehicles 298–9
 impact of sport events, environmental 207–9,
 217–18; ecological footprint (EF) 210,
 212–13; economic impact and 208–9, 212;
 environmental input-output analysis (ENVIO)
 210–13; FA Cup Final 211–17; results summary
 213–17; Rugby 6 Nations (R6N) 211–17; Tour
 de France Le Grande Départ 211–17; visitor
 surveys 213
 indirect private return 43
 infectious diseases 255
 Inoue, Y. 16, 29
 institutionalization/standardization in fields
 110–11
 integrated approach to environmental sustainability
 6–8
 integration of sport-ES across the curriculum
 90–1
 Intergovernmental Panel on Climate Change
 (IPCC) 70–1
 intermediate ethics 58
 International Association of Surfing Academics
 306; spreading the STOKE certification
 310–13; STOKE certification creation
 309–10
 International Dark Sky Association 281
International Journal of Energy Research 31
International Journal of Green Energy 31
International Journal of Hyperthermia 31
International Journal of Sport Finance 12, 29
*International Journal of Sport Management and
 Marketing* 12
International Journal of Sports Management 12
*International Journal of Sports Marketing and
 Sponsorship* 12
International Journal of Sustainable Transportation 31
*International Journal of Tourism, Space and
 Environment, An* 30
 International Olympic Committee (IOC) 4, 60,
 109–10, 233, 408; diffusion 113–14; economics
 of sports and 44–6; greenwashing and 321–2;
 institutionalization/standardization in fields and
 110–11; *see also* Olympic and Paralympic Games
International Review for the Sociology of Sport 12
International Sports Law 12, 29
 International Standards Organization (ISO)
 413–14; management and operations standards
 224–6
 International Union for Conservation of Nature
 and Natural Resources 341, 405
 interpretive nature of environmental messaging
 and actions 128–9
 interspecies equity 340–1, 348; animal standpoint
 theory and 343–7; equity-based sustainability
 and 341–2; future directions 347–8; speciesism
 and anthroparchy and 342–3; sustainability and
 sustainable development and 341
 Isidore, C. 429
 Iyer-Raniga, U. 81, 90
- Jacobsson, B. 110
 James, Bill 36
 James, J. D. 138
 James, LeBron 39
 Jarvis, N. 20, 29
 Jin, L. 18, 29, 102, 234
 Jing, L. 18–19, 29
 John, G. 352
 Johnson, P. 30, 71
 Johnson, Ralph 278
 Johnson-Lawrence, V. 370, 372
 Jolie, Angelina 39
 Jones, C. 322–3, 433
 Jordan, A. 395
Journal of Cleaner Production 31
Journal of Environmental Policy & Planning 30
*Journal of Hospitality, Leisure, Sport and Tourism
 Education* 12, 29
Journal of Issues in Intercollegiate Athletics 30
Journal of Occupational Medicine and Toxicology 31
Journal of Political Economy 36
Journal of Power Sources 31
Journal of Sport and Social Issues 12
Journal of Sport and Tourism 11
Journal of Sport Behavior 12, 29
Journal of Sport Management 12

- Journal of Sports Economics* 12
Journal of the Philosophy of Sport 12, 29
Journal of Transport Geography 30
 Judge, W. 103
 justice theory 178–9
- Kahlmeier, S. 371
 Kaizen training 229–31
 Kallio, T. 405–6
 Kalof, L. 138
 Kang, S. J. 25
 Kaplanidou, K. 16, 25, 235–7
 Karadakis, K. 16, 235, 237
 Karamichas, J. 235
 Karlis, G. 237
 Karlsson, L. 310
 Kates, R. W. 55, 57
 Kellett, P. 17–18, 20
 Kellison, T. 13–14, 17, 23, 102–3, 134
 Kemp, R. 406
 Kent, A. 16, 29
 Kerber, K. 103
 key performance indicators (KPI) 136, 145
 Kim, C. 30
 Kim, Y. 13–14
 King, A. 150
 Kirchgeorg, M. 90
 Koerner, B. 291
 Kokolakakis, T. 30
 Kolk, A. 243
 König, U. 70, 81
 Konstantaki, M. 20–1
 Koohsari, M. J. 364
 Krenza, G. 271
 Kronlid, D. 81, 83–4, 91
 Kudret, S. 181, 183
 Kurcab, Ross 355
- Lachowetz, T. 151
 LaGore, W. 320
 Lambert, G. 225
 land damage/destruction and tailgating 282, 286
 Land Ethic 59
 Landman, T. 244
 LaRue, L. 228
 law and norms in sustainability developments 418, 425–6; EPA and 419; Major League Baseball and 421–3; NASCAR and 424–5; National Basketball Association and 423; National Football League and 419–21; National Hockey League and 423–4
 Lawson, G. 372
 Leadership in Environmental and Energy Design (LEED) 67, 149, 418–19, 447, 452–3; brand management and 154; Date of Ecological Maturity (DEM) and 436; environmental certifications standards 226–8; exchange theory and 155; finding the right sponsor and 153–4; future research recommendations 158; Major League Baseball and 422; National Basketball Association and 423; National Football League and 419–21; National Hockey League and 424; practical significance 157–8; social identity theory and 157; sport sponsorship and 152; Vancouver Olympic Games and 193–4; venue sustainability and 268–9
- Lee, D. 157, 184
 Lee, H. 156
 Lee, J. 157, 200
 Leiserowitz, A. A. 55, 57
Leisure Studies 30
 Lenox, M. 150
 Lenschow, A. 395
 Lenskyj, H. J. 323
 Leopold, Aldo 59
 Lera-Lopez, L. 30
 Letters, M. 114, 321, 407
 Levett-Therivel Sustainability Consultants 163
 Levi's Stadium 353–4, 381
 Lewis, Michael 36
 light green ethics 58, 320
 light pollution 281–2, 285
 Limehouse, F. 21, 29
 Lindsey, I. 59
 Lippi, G. 67
 Liu, D. 14, 29, 235
 Lloyd, A. 334
Local Environment: The International Journal of Justice and Sustainability 31
 Loland, S. 334
 London Olympic Games, 2012 241–2; environmental sustainability debate and 404–6; governance of environmental sustainability in 409–14; reporting and assurance for 246–9; sustainability and assurance 242–6
- Lotz-Sisitka, H. 81, 83–4, 91
 Lourenço, J. M. 405
 Lovasi, G. 369, 371
 Lovegrove, H. 13, 81
 Lowe, A. 359
 Lowes, M. 23
 Luckmann, T. 122–3
 Lyman, Gregory 359
 Lynch, Mike 424
- Ma, X. 18–19, 29, 234
 Maak, T. 272
 Macht, M. 167
 MacIntosh, E. 14, 81
 MacVaugh, J. 83, 91
 Madanipour, A. 372
 Madden, T. J. 137–8

- Maffulli, N. 67
 Mahdjoubi, L. 365, 371–2
 Mahoney, L. S. 320
 maintenance stage of change 260
 Mair, J. 24
 Major League Baseball (MLB) 60, 268, 346, 421–3
 Major League Soccer 268
 Mallen, C. 11–12, 17, 19–20, 25–6, 28–9, 31, 80, 152, 429
 Malmö, Sweden: importance of urban environment in 370; urban development and environmental sustainability in 365–70
 Malthus, T. 404
 Manning, Peyton 39
 Mansfield, L. 22
 Mao, L. 18, 29
 Marcus, J. 91
 marketing: cause-related 150–3, 157; considerations in economics of sports 39–40; trends in green 150
 marketing of sustainability 134–5, 147; campaign architecture 146; communication goals and KPIs in 145; Communications Strategy Wheel (CSW) and 135–6; idea amplification in 146; moments of receptivity in 146; plan activation 147; Sport Fan Sustainability Behavior (SFSB) model and 137–45; Sustainability Campaign Pathway and 136–7
 Marles, K. 26
 Martí, C. 304
 Martinet, G. 156
 Matten, D. 111
 Matzarakis, A. 30
 McCarville, R. 155
 McCormack, Scott 312
 McCormick, R. 21, 29
 McCullough, B. 19, 23–4, 29–30, 103–4, 185; on marketing sustainability 134–5, 139–40
 McDonald's 164–5, 186
 McGarry, D. 81, 83–4, 91
 McKee, L. 103
 McKenzie, D. C. 67
 McNeill, D. 405
 McRoberts, S. 26
 McSherry, M. 25
 Mecija, Melissa 359
 Meenaghan, T. 183
 Meier, K. 345
 Melvin, P. 21, 29
 Mendelson, N. 152
 Merrilees, B. 26
 micro-macro linking and sustainability 162
 mid-green ethics 58
 Midttun, A. 111
 Mile High Stadium 354–6
 Miles, S. 235
 Millennium Development Goals (MDGs) 56
 Miller, V. 31
 Millett, G. 30–1
 Millington, B. 320–1, 324, 327
 Mincyte, D. 22
 Mirkatouli, G. 31
 Miyazaki, A. 152
 Model of Sport Consumer Behavior 137
 Model of Sustainability 137
 Mohammad-Nejad, V. 31
 Mol, A.P.J. 319, 322
 Mondello, M. 17
Moneyball 36
 Moon, J. 111
 Moore, J. 82–3, 90
 Morgan, W.J. 345
 Morsing, M. 112, 117
 Motivation–Opportunity–Ability model 137–8
 Munday, M. 322–3
 Myer, A. 433–4
 Naess, Arne 59
 NASCAR (National Association for Stock Car Auto Racing) 424–5; economics of sports and 47; greenwashing and 324–5
 National Australian Built Environment Rating System (NABERS) 229
 National Basketball Association (NBA) 61, 268, 423
 National Chicken Council 346
 National Coalition for Pesticide-Free Lawns 282
 National College Athletic Association (NCAA) 268
 National Environmental Education Foundation (NEEF) 354
 National Environmental Policy Act (NEPA) 380
 National Football League (NFL) 61, 268, 346, 351; economics of sports and 46; law and norms affecting 419–21
 National Hockey League (NHL) 3, 61, 268, 423–4; greenwashing and 326–7
 National Hot Dog and Sausage Council 346
 National Oceanic and Atmospheric Administration 68
 natural capitalism 80
 Natural Resources Defense Council (NRDC) 48, 60, 358–9, 379, 418, 421
 Negretto, G. 101
 Nelson, C. 30
 Newman, A. 181
 Newman, O. 372
 News Deeply 354
 Nguyen, S. 23–4, 185
 Nibert, D. 342
 Nicholson, M. 87
 noise pollution 281–2, 285

- Nordberg, P. 405–6
 Norton, M. 83, 91
 Nunkoo, R. 235
 nutritional issues and health 255
- Obama, Barack 445
 O'Brien, D. 12, 303
 Olympic and Paralympic Games 4–5, 51n9, 54–5, 60, 109–10; climate change and future 70–5; current literature on sustainability, the environment, and 234–5; diffusion and 113–14; economics of sports and 44–6; environmental sustainability examples 114–15; EU Eco-Management and Audit Scheme and 396; formal contracts for regulation 115–16; future research on environmental sustainability and 117–18; greening the games versus greenwashing the games 116–17; greenwashing and 321–4; institutionalization/standardization in fields and 110–11; McDonald's as sponsor of 164–5; Olympic Games Impact (OGI) study 233–4; residents' attitudes toward the environment legacies of 235–7
 Olympic Delivery Authority (ODA) 246–7, 412, 414
 Olympic Movement (OM) 109–11; corporate sustainability efforts (CSE) and 111–13; environmental sustainability and 407–9
One Planet Living 409–10
 Operational management, environmental 28
 Ostrom, Elinor 241, 246
 Otto, I. 27
Our Common Future 394
 outdoor and adventure sport (OAS) 330; ecological dynamics perspective and 335–7; growing importance in creating deeper environmental identity 333–5
 Outdoor Foundation 333
 outdoor gyms 369–70
 ozone 292
- Packer, J. 336
 Paquette, J. 19–20
 Parent, M. 21–2
 Park, J. 406
 Parkin, J. 370
 Parris, T. M. 55, 57
 participatory planning in physical activity 368–9
 Parto, S. 406
 Peattie, K. 137–8
 pedagogical approaches for sport-ES education 84–91
 Peeler, T. 358
 Penn, Sean 39
 Pentifallo, C. 238, 322–3
 Perego, P. 243
 periphery adjustments and greenwashing 324
 persuasion 124–5
- Pettigrew, A. 103
 Pezzoli, A. 31
 Pfahl, M. 15, 23–5, 29–30, 81, 185, 233; on pro-environmental belief and action 126
 Phillips, P. 14, 81
 philosophical origins of environmental sustainability 80, 123–4
 physical activity and sport in public spaces 362; active meeting places 365–6; future directions 373; importance of urban environment and 370; outdoor gyms for 369–70; participatory planning 368–9; sports context in 362–3; thinking outside the box and the pitch in 366–8; urban context in 363–5; urban development and environmental sustainability in Malmö 365–70
- Picariello, M. 185
 Pinehurst Golf Course 356–8
 Pintó, J. 304
 Pless, N. M. 272
 Plewa, C. 184
 policy and regulatory action 43–4
 Polonsky, J. 152
 Ponsford, I. 21
 Ponting, J. 12, 301, 303
 porta-potties 283
 Porter, T. 89
 Potteiger, K. 257
 Prayag, G. 235
 precontemplation 259
 preparation stage of change 259
 Preuss, H. 104, 207
 Prochaska, J. O. 259
 Professional Golfers' Association (PGA) 48
 Professional Rodeo Cowboys Association (PRCA) 345
 Project Environment-Friendly Olympics (PEFO) 113
- Quental, N. 405
 Quester, P. G. 184
- Racioppi, F. 371
 Raco, M. 412
 Raynard, P. 243, 246, 250
 RecycledH2O 352
 recycling 257
 Reeser, J. 31
 Relph, E. 371
Renewable and Sustainable Energy Reviews 31
Renewable Energy 31
 rent seeking 44, 51n4
 residents and the Olympic Games: attitudes toward environment legacies 235–7; discussion 237–9; literature on 234–5
 rhetoric 121, 130; actions in the green spotlight and 125–6; choosing communication content and platforms for 127–8; in concept and

- practice 121–2; educators of environmental issues and 126–7; enabling and constraining forces acting on messages in 125–7; individual sport organizations and personalization of 129–30; and interpretative nature of environmental messaging and actions 128–9; persuasion and 124–5; philosophical foundation of sustainability and 123–4; and rhetorical nature of sport and the natural environment 122–5; social construction of environmental activities and 122–3; vision and mission statements and 127
- Rio Earth Summit 55
- rituals 169–70
- Robertson, Gregor 190, 192, 200
- Robertson, M. 5
- Robinson, J. 91
- Rockström, J. 433
- Roe, J. 335
- Romanelli, E. 103
- Roshan, G. 31
- Rothengatter, W. 249
- Rottenberg, Simon 36
- Roy, D. 152
- Rugby 6 Nations (R6N) 211–17
- Ruhanen, L. 13, 81
- Rupp, D. E. 178–9, 181, 183
- Rutty, M. 30, 71
- Sadd, D. 412
- Safeguarding California 386
- Salome, L. R. 30
- Sam, M. P. 125
- Samaranch, Juan Antonio 113
- Samuel, S. 322–3
- San Francisco Bay Conservation and Development Commission (BCDC) 380–5
- Schaffner, S. 22–3
- Schoeneborn, D. 112
- Schram, S. 244
- Schultz, P. W. 80
- Schumacher, E. F. 404
- Schwartz, B. 82
- Schwarzenegger, Arnold 382, 385
- Scott, D. 30, 71
- Sears Co. 151–2
- Selig, Bud 421
- Sen, S. 124
- Seth Carley, Danesha 357–8
- Shakoov, A. 31
- Shalini, S. 14–15
- shallow ethics 58
- Sheard, R. 352
- Shearman, R. 54
- Shreffler, M. 150
- Singer, P. 342
- skiing 69–70
- Smith, A. 412
- social construction of environmental activities 122–3
- social exchange theory 179, 234
- social identity theory 157; corporate social responsibility and 178
- social justice movements 39
- Social Justice Visitors 141–5, 146
- Social Responsibilities of the Businessman* 112
- Sociology of Sport Journal* 12, 29
- Söderman, S. 101
- Solis, B. 146
- Sotomayor, S. 301–2, 306
- sourcing 268–9
- Soyka, P. 150
- speciesism 342–3
- Spector, S. 25–6
- Spencer, B. 365, 371–2
- sponsorships 149, 161–2; brand management and 154; cause-related marketing and 150–2; employee responses to 184–5; finding the right 152–4; food and drink industry 164–5, 170–3; as form of CSR investment 183–6; future research recommendations 158; literature review 149–54; practical significance 157–8; responses to high-profile 185–6; sport 152; theoretical significance of 154–7
- Sport and Sustainability International 4
- sport and the natural environment: anthroparchy and 344–7; climate change and 67–70; emotional experience through 7; environmental sustainability and 59–62; as forceful catalyst for pro-environmental action 446; interactions with economics 42–50; relationship between 3–4, 66–7, 79; rhetorical nature of 122–5; water in 352–8
- Sport Fan Sustainability Behavior (SFSB) model 137–45
- Sport History Review* 12, 29
- Sport in Society* 12
- sport management 6–7; advocacy for sport-ES courses in programs for 86
- Sport Management and the Natural Environment: Theory and Practice* 81
- Sport Management Education Journal* 12
- sport management environmental sustainability research literature 11–12, 31–2; environmental activities in stakeholder disclosure and relationships 23–7; environmental management performance 12–28; environmental operational countermeasures 27; environmental operational management 28; environmental tracking 27–8; future directions 29–31; introduction to environmental sustainability 12–23; robustness 28–9
- Sport Management Review* 11, 28
- Sport Marketing Quarterly* 12, 29
- Sports Medicine* 31

- sports teams: environmental review and sustainable stadiums of 380–5; sustainability trend in sports and 379–80
- St. Jude Classic professional golf tournaments 151
- stadium sustainability: California state leadership on 385–6; cities leading the way with 386–7; Date of Ecological Maturity (DEM) and 430, 434–7; energy conservation ordinances and 387–8; environmental review and 380–5; next level in 388–90; spectacle of environmental sustainability in sport and 446–9; steady state economics and 429–40
- stages of change model 258–60
- Stahle, A. 364
- stakeholders: costs of tailgating 279; definition of 180; disclosure and relationships, environmental activities in 23–7; employee responses to socially responsible activities targeted toward a variety of 180–1; targets triggering specific processes 181–3; venue sustainability and 272–4
- state environmental policy acts (SEPA)s 380–5, 419
- Statistics Portal, The* 152
- steady-state economics 429–30; Date of Ecological Maturity (DEM) and 430, 434–7; discussion of limitations and future research 439–40; and ecological economics and throughputs of matter and energy 430–4; goals of 434
- Steiger, R. 30, 71
- Stein, J. H. 180
- Stern, P. C. 138
- Stevens, J. 19–20, 26, 80
- Stewart, A. 411
- Stoeckl, N. 304
- STOKE *see* International Association of Surfing Academics
- Stoldt, G. 122
- strategic aligned learning model (SALM) 87
- structural equation modeling (SEM) 141
- Stryker, S. 138
- Stubbs, D. 6, 226
- Stubbs, W. 14–15, 322–3
- surf tourism 301–2, 313–14; creating the case for certification in 306–9; sustainability challenge and 305–6; theoretical background 303–5; tourism accreditation and certification programs 304–14
- Susan B. Komen Breast Cancer Research Foundation 151
- sustainability *see* environmental sustainability
- Sustainability* 31
- Sustainability Campaign Pathway 136–7, 140
- Sustainable Communities and Climate Protection Act of 2008 386
- Sustainable Development* 31
- sustainable development goals (SDG) 56–7, 162
- Sustainable Environment Research* 31
- Suzuki, David 191
- Swedish Sports Confederation 369
- System of Environmental-Economic Accounting (SEEA) 221–2
- tailgating 278–9, 287; air quality and 280, 284, 291–9; call for intervention in 283–4; environmental costs 279–83; Idle-Free 298–9; recommended steps toward sustainable 284–7
- Tarrant, S. 81
- Taylor, K. 152
- Tebow, Tim 39
- TED Conferences 199–200
- Teehan, P. 27–8
- Tellus Institute 229
- Thiele, L. 81
- Thompson, S. 364
- Thorne, L. 320
- Thwaites, D. 155
- Thyssen, O. 112, 117
- Timms, J. 116
- Tomlinson, A. 238
- Tour de France Le Grande Départ 211–17
- Towards a One Planet Olympics* 410–11, 413
- Towner, N. 303
- tracking, environmental 27–8
- Trail, G. T. 135–40, 145, 157; on amplification 146; on campaign architecture 146; on plan activation 147
- Transforming Our World* 56
- translation, venue sustainability 270–4
- Transparency International* 242
- transtheoretical model (TTM) 258–60
- Tranter, P. 23
- Trendafilova, S. 24–5, 30, 81, 302; on capacity building 102, 105; on CSR rationale 125
- Treviño, L. K. 180
- Trump, Donald 445
- Tsouros, A. 372
- Turker, D. 180
- Turner, P. 14, 20, 81
- Tushman, M. 103
- Tyler, D. 17–18
- Uecker-Mercado, H. 153
- United Nations 351; Conference on Environment and Development (UNCED) 55; Conference on Sustainable Development 56; definition of sustainable development 162; Development Programme (UNDP) 100, 103; Environment Programme (UNEP) 60, 111, 116, 229, 405, 407–8; World Commission on Environment and Development 5, 341
- United States Green Building Council (USGBC) 67, 149

- United States Tennis Association (USTA) 48
- Value-Belief-Norm model 137–8
- Vancouver Olympic Games, 2010 190–1, 201–2; business development program results 195–200; developing green jobs through a collaborative regional Olympic Games hosting strategy 194–5; Games-related business development brand launch 192–5; greener building codes in 196–7; greener building standards in 196; Home Energy Loan Program 196; hosting program aimed at green business development 197–9; public transit 197; sport competition venues and related infrastructure 193–4; tourism promotion strategy 199–200; transportation management and infrastructure 194; Vancouver’s “green credentials” and 191
- Van Wynsberghe, R. 233, 238, 322–3
- Venture Philanthropy Partners (VPP) 100–1, 103
- venues, sport 267–8, 274–5; energy and environmental design 269; local context 271–2; stakeholders 272–4; sustainability in the United States 268–70; sustainability translation 270–4; waste management 270
- Vickery, B. 352
- vision and mission statements 127
- Wake Forest Law Review* 31
- Walker, G. 123
- Walker, J. 246
- Walker, M. 14, 18, 21–2, 29, 81, 153
- Walraven, M. 186
- Wals, A. 81, 83–4, 91
- Wang, H. 180
- Warzynski, C. 103
- waste: effects on health of the environment 253–5; management by sports venues 270; produced in athletic training 255–6; production and tailgating 280–1, 285; recycling materials to reduce 257; reducing use of materials to reduce 256–7; reusing materials to reduce 257
- water 351–2, 358–60; connections between sport and 352–8; golf course management and 356–8; infrastructure for moisture sensors at Mile High Stadium 354–6; San Francisco and the California drought 353–4
- Watson, Tom 267
- Weaver, G. R. 180
- Whannel, G. 250
- Whelan, Jay 228
- Wickens, E. 20–1
- Wickert, C. 112
- Wiek, A. 91
- Williams, P. 21
- Wilshire, C. 136, 146
- Wilson, B. 320–1, 324–5, 327
- Wilson, R. 14, 29, 235
- Winkelman, S. 359
- Winn, M. I. 90
- Women’s National Basketball Association (WNBA) 151–2
- Women’s Tennis Association (WTA) 48
- World Bank 100
- World Commission on Environment and Development 394
- World Conservation Strategy 405
- World Health Organization (WHO) 363, 371
- World Solar Challenge 184
- World Summit on Sustainable Development (WSSD) 55
- World Surf League (WSL) 310
- World Wildlife Fund for Nature 405
- Xiong, A. 91
- Yoo, J. 150
- Young, A. 135, 137
- Yun, H. 357
- Zadek, S. 113, 243, 246, 250
- Zang, W. 372
- Zepf, B. 184
- Zhang, J. 18–19, 29, 234