The Geopolitics of Climate Change

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Challenges to the International System

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Sammanfattning

Denna rapport analyserar konsekvenserna som klimatförändringarna och den globala uppvärmningen kan få för internationell politik i allmänhet och för internationell säkerhet i synnerhet. Rapporten fokuserar på om, och i så fall hur, klimatförändringarna påverkar de grundläggande villkoren för internationell säkerhet. Med denna utgångspunkt konstaterar rapporten att initialt sett kommer klimatförändringarnas effekter betingas av existerande ekonomiska, politiska och sociala strukturer i olika delar av världen. Organiserat våldsanvändande är en troligare konsekvens i regioner med svaga stater och oroliga mellanstatliga relationer. På kort- och medellång sikt kommer dock klimatförändringarna sannolikt inte att förändra de strukturer som sätter ramarna för internationell säkerhet.

Beroende på graden av kommande klimatförändringar kan dessa strukturer komma att förändras på lång sikt. Dessa förändringar är sannolikt avhängiga av de andrahandseffekter som klimatförändringarna kan få på världsekonomin. Klimatförändringarna kommer sannolikt inte leda till en ökning av konflikter på kort- och medellång sikt, men på lång sikt kan oförminskade klimatförändringar få allvariga konsekvenser för internationell säkerhet.

Rapporten påpekar att de nödvändiga åtgärderna för att minska utsläpp och anpassa samhällen till klimatförändringar kan få konsekvenser för internationell politik. Detta beror på de förändringar i sociala och politiska system som åtgärderna kan medföra.

Nyckelord: klimatförändringar, internationell säkerhet, miljösäkerhet, systemteori, Luhmann

Summary

This report analyses the consequences of climate change and global warming for international politics in general and international security in particular. The report focuses on whether and in what way climate change may alter the conditions of international security. From this perspective, the initial effects of climate change will vary according to existing economic, political and social structures in different world regions. Organised violence is more likely in regions with weak states and conflictual inter-state dynamics than in those characterised by co-operative relations. In the short- to medium term, climate change is unlikely to alter the constitutive structures of international security.

However, depending on the severity of climate change, these conditions may change over the long term. Such changes will probably depend on the secondary effects that change has on the world and regional economies. Climate change is unlikely to lead to an increase in conflicts in the short- to medium term, but a long-term development marked by unmitigated climate change could very well have serious consequences for international security.

The report argues that, although necessary, mitigation and adaptation measures may have consequences for international politics. These are due to the changes in social and political systems that they entail.

Keywords: climate change, international security, environmental security, systems theory, Luhmann

Preface

When Dr. Annika Carlsson-Kanyama, the initiator of what today is the well-established research programme Climatools, approached me in early 2006 I had spent few academic thoughts on climate change. Annika was looking for international relations and security policy perspectives on the issue of climate change, something she found woefully lacking in the international climate debate of the day. In our following conversation I recalled, from my own dissertational work several years ago, some of the the old school geopolitical theoreticians from the first half of the 20th century. They actually emphasized climate factors in a way that perhaps could be fruitful in a context of global climate change analysis.

However, the basic climate argument of geopolitical theory was actually an argument of stability: the climate, together with geography and topography, sets much of the scene for any country's economic, and thus military, power base. Climate as well as geography are phenomena, it was argued, that do not change change that much. Or do they? The view today, more than fifty years later, is of course very different. What struck me as an utterly interesting research venue was therefore the exploration of climate change as a factor in the geopolitical, international relations and security policy realm, and I immediately began designing a research project in this spirit. It was finalized in and e-mailed to Annika from a hot Canberra hotel room, on a research trip for other purposes to Australia. Ironically, the climate change debate in that country – especially in terms of drought - then came up as one of the real important issues in the Australian general elections of 2007.

Late in 2006, the Climatools programme and my project proposal were approved, but my work load then made it impossible for me to continue working actively in the project. Luckily, a talented and recently recruited researcher, dr. Peter Haldén, was able to take up the torch and almost the whole of this report is his work. Besides designing the initial project proposal, my only contribution to the text is the part on geopolitical theory in section 2.3. It is my hope that Peter's very thorough and ground-breaking research gets the attention it merits.

Dr. Mike Winnerstig

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Author's Preface

Because of the rapid growth in the body of available knowledge, writing about climate change today is more difficult than shooting at a moving target. In fact it is more like analysing a constantly mutating entity. From the perspective of the scientific community this is a good thing since our knowledge is constantly growing. However, from the perspective of the individual researcher it is rather problematic since it is well nigh impossible to keep up with the existing state of research. As this report was being finalised, the latest *World Energy Outlook* was published by the International Energy Agency (IEA). This IEA report states that in light of China's and India's currently high and growing energy demands and fossil fuel use, the world is moving closer to an inevitable increase in global mean temperatures of 3ºC above pre-industrial levels. To check global warming at these already high levels, 'urgent action' would be required.[1] If the IEA is correct, then the present report would already have to be counted among the 'conservative' estimates of climate change. Almost all prefaces to academic and policy-oriented works tend to stress the importance of their research field and argue that further research is necessary. Clearly, in this case advocating the need for further research seems to be very close to 'common sense'.

This is one of the reports emanating from the research programme Climatools which is a joint undertaking by the Swedish Defence Research Agency, the Royal Institute of Technology (KTH) of Sweden and the Universities of Umeå and Uppsala. The programme is financed by the Swedish Environmental Protection Agency (*Naturvårdsverket*) and its purpose is to undertake a number of studies in order to create tools that can assist the efforts of Swedish society in adapting to climate change. This report has a dual purpose, firstly as a stand-alone report and secondly to serve as a global context for the other studies within the programme, which have a much more exclusively Swedish focus. In its capacity as a stand-alone report, this document has the ambition of being suitable for use by a European and international readership of scholars and policy-makers.

In its capacity as a first study in a series of many with a more specifically Swedish focus, an important task of this report is to identify bifurcation points that could be used as a basis to produce scenario-like narratives of climate change and security politics. Bifurcation points are key issues from which, hypothetically, different developments could follow. This is particularly relevant in Section 3, the regional analyses of climate change, but it also features in

[1] See IEA 2007:50

Section 4, which deals with thematic issues. Some of these bifurcation points form the basis of the narrative scenario construction undertaken by the forthcoming Climatools report 3: *Scenarios as a tool for assessment of vulnerabilities and strategies* written by Karl-Henrik Dreborg and Henrik Carlsen.

A number of people *have* been most helpful with comments, criticism and suggestions to the report. Therefore gratitude is due to the following people: Mattias Lundblad of the Swedish Environmental Protection Agency, Oskar Wallgren of the Swedish Environment Agency, Mikkel Vedby Rasmussen and Bertel Heurlin of the Danish Institute of Military Studies, Major-General Michael Moore of the Swedish Armed Forces, Helena Tagesson of the University of Växjö, Sven Ove Hansson of the Royal Institute of Technology, Örjan Bodin at the Swedish Centre of Resilience Studies and last, but certainly not least, Annika Carlsson-Kanyama, Oskar Parmhed, Karl-Henrik Dreborg and Henrik Carlsen at the Swedish Defence Research Agency. As always, any and all mistakes and flaws are the author's own.

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Summary in Swedish/ Sammanfattning på svenska

Inledning

Rapporten *The Geopolitics of Climate Change* (”Klimatförändringarnas geopolitik”) behandlar de konsekvenser som klimatförändringarna kommer att kunna få för internationell säkerhetspolitik i framtiden. Forskningen har bedrivits som ett delprojekt i Climatools, ett forskningsprogram om Sveriges anpassning till klimatförändringarna som är förlagt till FOI och finansierat av Naturvårdsverket.

Den här rapporten utgår från vad man kan kalla en ”traditionell” förståelse av säkerhetspolitikens fokus: *Användandet av eller hotet om användande av organiserat väpnat våld*. Detta kan utövas av flera aktörer än stater, såsom organiserade brottsnätverk, klaner, gerillagrupper, terrorister mfl. Vi har valt att skriva om klimatförändringarna utifrån detta perspektiv då det redan finns många rapporter om klimatförändringarnas inverkan på vad UNDP (United Nations Development Programme) har kallat ”mänsklig säkerhet”, eller human security. Det senare innefattar säkerhet från nöd och därmed inkluderas aspekter som sjukdomar, svält, och ekonomiska kriser som säkerhetsrisker.[2] För denna rapport däremot står risken för väpnade konflikter i fokus.

Mer precist handlar rapporten om hur klimatförändringarna påverkar villkoren för konflikt respektive internationellt samarbete. Samhällsvetenskapligt sett kan man inte säga att klimatförändringarna direkt orsakar konflikter, däremot kan globala och regionala klimatförändringar förändra, och i vissa fall förvärra, villkoren för säkerhetspolitik på många håll i världen. För att skilja på de effekter som klimatförändringarna får direkt på naturliga system och de som de får indirekt på politiska system talar rapporten om naturliga och politiska effekter.

Rapporten fokuserar på konsekvenserna av måttliga klimatförändringar, i syfte att belysa att även minskade klimatförändringar kan få säkerhetspolitiska implikationer. Rapporten närmar sig frågan på två sätt:

1. Genom att undersöka de konsekvenser som klimatförändringarnas direkta effekter – såsom torka, översvämningar, och havsytehöjning– kan få på säkerheten i världens regioner.

[2] WBGU 2007b:20

2. Genom att undersöka hur frågan om klimatförändringar påverkar den internationella politiken. Klimatfrågan är så att vi bedömer att såväl klimatförändringarnas effekter som ansträngningarna att hantera dem genom nedskärningar och anpassning kommer att förändra den internationella politiken. En kärnfråga är huruvida klimatförändringarna skapar nya villkor för hur internationell politik bedrivs och eventuellt nya konfliktmönster eller om klimatförändringarna förstärker existerande mönster.

De långsiktiga samhälleliga konsekvenserna av klimatförändringarna är mycket svåra att analysera på ett vetenskapligt sätt. Dels då klimatförändringarna på sikt kan leda till mycket stora skillnader gentemot dagens situation, dels då det är mycket svårt att analysera orsakssambanden i flera led.[3] Därför har vi valt att skriva rapporten i ett fyrtioårsperspektiv, dvs. slutsatserna behandlar perioden fram till år 2050. Det innebär att vi har antagit att mindre kraftiga förändringar då har ägt rum och att vi i denna rapport analyserar initiala konsekvenser av klimatförändringarna.

Rapportens huvudpunkter

Stora klimatförändringar kan på sikt förändra global säkerhet

Mycket allvarliga klimatförändringar kommer, framför allt på lång sikt att kunna medföra stora förändringar i den internationella politiken i en mer instabil riktning. Detta beror dels på territoriella förändringar, dels på grund av att världsekonomin kan drabbas mycket hårt. Territoriella förändringar innebär att förändringar i temperatur och nederbörd kan påverka vissa områdens försörjningsförmåga så att de kan komma att betraktas som obrukbara. På lång sikt kan även havsytehöjningen innebära territoriella förändringar i bemärkelsen att länder ”förlorar” mark. Sammantaget kan klimatförändringar innebära mycket stora påfrestningar på samhällen och stater, något som de på sikt kanske inte kan klara av. Det är en anledning till att det är angeläget att ansträngningar görs för att minska klimatförändringarna. Med andra ord kan oförminskade klimatförändringar på lång sikt skapa nya och instabilare villkor för den internationella säkerhetspolitiken.

Klimatförändringarnas konsekvenser betingas av politiska strukturer

Inledningsvis, dvs. inom tidsramen för denna rapport, kommer klimatförändringarnas effekter att betingas av existerade ekonomiska, politiska och

[3] Detta gäller inom de utgångspunkter som valts för studien. Ett annat tillvägagångssätt finns redovisat i Dreborg 2004.

sociala strukturer. Med andra ord kommer inte klimatförändringarna att skapa helt nya mönster utan att förstärka existerande strukturer.

Staters förmåga och agerande är avgörande för konfliktrisken

En fråga där staters roll och agerande är av största betydelse för om effekter av klimatförändringar medför en ökad konfliktrisk är den om flyktingströmmar. I de fall där konflikter har uppstått i samband med flykting- och migrationsrörelser har de inblandade staterna, både staten människor flytt från och den som de flytt till, spelat avgörande roller. Ibland har de aktivt utnyttjat eller skapat motsättningar mellan lokala grupper eller använt dem som brickor i ett större maktspel. I andra fall kan oförmåga att hantera en flyktingsituation eller bristande insikt eller ansvarstagande leda till problem.

Majoriteten av flyktingar stannar kvar inom landet eller flyr till angränsande länder. Detta gör att det finns anledning att betvivla uppgifter om att klimatförändringar kan leda till långväga flyktingströmmar och att dessa skulle utgöra hot mot Europa. Klimatförändringar kan dock leda till att många människor i utsatta områden kan tvingas lämna sina hem och bostadsorter vilket kommer att kunna sätta press på storstäder i närområdet. Detta i sin tur ökar såväl människornas som städernas sårbarhet för klimatförändringar, eftersom städer ofta ligger vid kuster och därför kan drabbas av havsytehöjningar och av extremt väder.

Det finns olika vägar till konflikt som följd av klimatförändringarna

En första kategori är interna konflikter. Dessa kan uppstå då politiska aktörer försöker utnyttja resursfördelningsfrågor i samband med naturkatastrofer eller spänningar mellan befolkningsgrupper i samband med att samhället försvagas av klimatförändringar. En viktig förutsättning för denna typ av konflikter är regeringars eller staters oförmåga eller ointresse att ta ett aktivt ansvar för att klimatförändringar inte drabbar olika befolkningsgrupper olika hårt. Det är också tänkbart att politiker som försöker befästa eller stärka sin ställning underblåser motsättningar i syfte att skyla över sin oförmåga eller ovilja att hantera den uppkomna situationen och istället avleder befolkningens uppmärksamhet genom att utse syndabockar. Ytterligare en tänkbar risk är att de påfrestningar som klimatförändringar kan medföra kan utnyttjas av politiska aktörer för att försvaga oppositionella (reella eller potentiella) grupper.

En andra kategori är mellanstatliga konflikter som kan uppstå till följd av att ett land försvagas av klimatförändringar. I en region där länderna har fientliga relationer och uppfattar sin säkerhet som ständigt utmanad av sina grannar skulle en försvagning av ett av länderna kunna ge upphov till ett ingripande från grannarna. Detta skulle kunna ske i syfte att förstärka sin egen position i regionen eller för ekonomisk vinning. Ett analogt exempel på denna slags konflikt är

krigen som uppstod i samband med sammanbrottet i Zaire/Kongo 1998-2004, då flera grannländer intervenerade med egna intressen.

En tredje kategori är mellanstatliga konflikter om resurser eller land. Huvudanledningen till att rapporten behandlar detta som en separat kategori är den uppmärksamhet som ”resurskonflikter” rönt inom media och allmän debatt, i Sverige såväl som internationellt. Av flera skäl ställer sig rapporten tveksam till detta, åtminstone på kort sikt. För det första har mellanstatliga krig i stor skala blivit svårare att genomföra, mer ekonomiskt och militärt dyrbara och mindre legitima sedan 1945. Svårigheterna rör dels att ockupera taget territorium, dels att modern teknologi, inte minst kärnvapen, är en starkt avskräckande faktor. För det andra kan klimatförändringar medföra en försvagning av stater, vilket även drabbar deras förmåga att organisera inför och genomföra krig (se nedan). För det tredje är få resurser ”statiska”, snarare kan teknisk utveckling leda till effektivare användning och till att ersättningar upptäcks när en resurs fördyras. En risk med oförminskade klimatförändringar är dock att de skulle kunna drabba världsekonomin så mycket att förmågan till teknisk utveckling skulle drabbas. Detta är emellertid osannolikt på kort sikt. För det fjärde förutsätter argumentet om resurskrig att de globala marknaderna för fördelning och tillskansning av naturresurser bryter samman. Endast om handel med naturresurser inte längre är ett tillräckligt medel kan krig i syfte för en stat att få tag på resurser. Dessutom förutsätter argumentet dels att staterna skulle återta ansvaret för styrning av näringslivet inom sina länder, dels att näringslivet återgår till att vara bestämt av nationsgränser. Dessa två villkor var för handen på 1930- och 40-talen men det skulle kräva mycket stora förändringar i den globala ekonomin såväl som i relationen mellan stat och näringsliv på en global skala för att vi ska se en sådan situation återvända.

En fjärde kategori utgörs av vad vi kan kalla ”lokala överlevnadskonflikter”. Detta kan uppstå mellan lokalsamhällen som lever nära de resurser som de är beroende av för sitt uppehälle, som småbrukare och boskapsskötande nomader. Även i detta fall är statens agerande av central betydelse. Risken för konflikter ökar markant om staten underlåter att upprätthålla lag och ordning, dvs. sitt våldsmonopol; om staten inte agerar aktivt för att åtgärda mänsklig nöd; eller – givetvis – om den utnyttjar lokala konflikter i egna syften.

Resursbrist leder inte bara till konflikter, utan även till samarbete

Bristen på resurser leder inte nödvändigtvis till konflikter. Istället visar många studier att stater och aktörer i civilsamhället kan samarbeta om gemensamma men knappa resurser. Andra exempel visar på att aktörer kan samarbeta om livsviktiga naturresurser även under spända säkerhetspolitiska förhållanden. Ett exempel på hur en objektiv brist på resurser kan leda till samarbete är the

Okavango River Basin Commission som bildades 1993 mellan Angola, Botswana och Namibia som ett svar på konflikter på lokal nivå i samband med vatten i Okavango-floden.[4] Istället för att dessa konflikter fortplantades upp på statsnivå ledde den gemensamma myndigheten till ett förstärkt samarbete mellan staterna såväl som till bättre vattenhushållning. Liknande exempel är the Nile Basin Commission som bildats mellan de länder som försörjs av Nilen och som stöds av EU.[5] Vi kan även se till relationerna mellan Indien och Pakistan för ett exempel på hur vattenresurser kan hållas åtskiljda från andra konfliktdynamiker. Sedan 1960 regleras de två ländernas uttag av vatten ur floden Indus av the Indus Water Treaty.[6] Detta arrangemang är anmärkningsvärt i ljuset av att länderna har mycket spända, tidvis fientliga relationer i övrigt.

Försvagade stater skapar komplexa säkerhetssituationer

Klimatförändringarna kommer att kunna försvaga samhällen och stater vilket får två olika säkerhetspolitiska effekter. För det första kan förmågan att upprätthålla lag och ordning drabbas vilket kan leda till instabilitet i landet. Försvagning av ett samhälles infrastruktur, institutioner och resurser kan dock innebära att andra strukturer, exempelvis klaner, också försvagas. Detta kan få till följd att risken för storskaliga inbördeskrig minskar men däremot att sönderfallstendenser i staten och i civilsamhället ökar. För det andra kan försvagningen av en stat innebära att dess förmåga att hota sina grannar såväl som den egna befolkningen minskar. Dessa mångfacetterade effekter av försvagning på grund av klimatförändringar gör att vi kan ställas inför komplexa situationer i framtiden, om än inte nödvändigtvis storskaliga konflikter.

Klimatförändringar verkar i kombination med miljöförstöring

Klimatförändringarna får säkerhetspolitiska konsekvenser i samverkan med andra faktorer. Ovan har vi nämnt att politiska och ekonomiska strukturer är betingande för detta. Det bör betonas att klimatförändringar kan komma att samverka med storskalig miljöförstöring och på så vis försvaga och rentav utarma utsatta länder. Ett sådant exempel är Kina som flera rapporter pekar ut som påtagligt sårbart för klimatförändringar samtidigt som landet hotas av storskalig miljöförstöring. Sammantaget kan detta innebära en försvagning av Kina, ekonomiskt och politiskt, vilket eventuellt kan leda till landsinterna problem. Ur ett internationellt perspektiv är det betydelsefullt om detta påverkar Kinas utveckling mot att bli en regional och global stormakt.

[4] Barnett 2000:277 Se även Okavango river basin commissions hemsida http://www.irbm.co.bw/
[5] Nile Basin Initiative http://www.nilebasin.org/ access 2007-07-25
[6] Indus Water Treaty http://transboundarywaters.orst.edu/projects/casestudies/indus.htm. access 20070813

Klimatförändringar hotar utveckling

Klimatförändringar kan lägga en hämsko på ekonomisk, social och i viss mån politisk utveckling i många länder i utvecklingsländerna. Sedan 1960-talet har forskningen däremot varit delad om vilka konsekvenser som utvecklingsgrad får för säkerhet och konfliktbenägenhet.[7]

En drabbad världsekonomi kan påverka internationell säkerhet

Klimatförändringar drabbar ekonomin och en försämrad världsekonomi kan vara en faktor som påverkar det säkerhetspolitiska läget i världen. Man kan inte dra otvetydiga orsak-verkan-samband mellan världsekonomins tillstånd och det säkerhetspolitiska läget i världen. Däremot kan en global nedgång i ekonomin minska de tillgängliga resurserna för krishantering och fredsbevarande operationer. På längre sikt skulle en långvarig ekonomisk kris kunna leda till större isolering mellan stater. Dessutom skulle de i ett sådant scenario kunna komma att ta på sig en större roll för att säkra sina samhällens ekonomiska överlevnad och tillgång på resurser vilket skulle kunna leda till en konkurrenssituation med säkerhetspolitiska förtecken.

Betraktar man enskilda regioner i världen bekräftas bilden att en ekonomisk nedgång skulle kunna leda till ett mer spänt säkerhetspolitiskt läge. I såväl Mellanöstern som Sydasien kan man historiskt koppla stabilitet till ett förbättrat ekonomiskt läge. Stora ekonomiska kriser kan leda till intern oro och därmed få säkerhetspolitiska konsekvenser men detta en möjlig, men inte nödvändig utveckling.

Klimatfrågan kan leda till spänningar eller till samarbete

Frågan om hur klimatförändringarna ska hanteras i form av globala minsknings- och anpassningsåtgärder kan skapa komplikationer och spänningar inom det internationella systemet. Detta då klimatfrågan kan kopplas till flera andra kontroversiella frågor av global karaktär. Exempelvis menar flera utvecklingsländer, däribland Kina och Indien, att de redan utvecklade länderna i Nord bär huvudansvaret för klimatförändringarna och att uppgiften att minska konsumtionen av fossila bränslen inte får inskränka rätten till ekonomisk utveckling för utvecklingsländerna. På så vis kan klimatfrågan eventuellt bidra till spänningar, både mellan enskilda stater och i en Nord-Syd dimension.

Hanteringen av klimatförändringarna skulle kunna få effekter på FN-systemet. Detta kan ske dels genom att spänningarna stiger och det blir blockeringar i

[7] Se Suhrke 1997 såväl som Huntington 1968

säkerhetsrådet, dels genom att systemet överlastas på grund av de ökade behoven av internationella insatser.

Ska klimatförändringar ses som en (traditionell) säkerhetsfråga?

Även om klimatförändringarna kan påverka säkerhetspolitiken globalt såväl som regionalt betonar vi vikten av att inte betrakta klimatförändringarna primärt som en traditionell säkerhetsfråga. Att göra det, vilket är mycket kontroversiellt inom forskningen om kopplingen mellan miljö och säkerhet, kan skapa självuppfyllande profetior och ge bränsle åt en rustnings- och säkerhetslogik som kan skapa spänningar. De direkta konsekvenserna av klimatförändringarna kan hanteras mycket mer effektivt genom civila kanaler än genom även om militär personal kan vara behjälplig t ex vid naturkatastrofer.

Åtgärder för att minska klimatförändringar och anpassa samhällen till dem kan påverka internationell säkerhet

Åtgärder för att minska utsläppen av fossila bränslen såväl som åtgärder för att anpassa samhällen och stater till kommande klimatförändringar kan få säkerhetspolitiska konsekvenser. Ett exempel på det förstnämnda är att radikala minskningar i konsumtionen av fossila bränslen, framför allt olja, kan drabba de oljeproducerande ländernas ekonomier och därmed på sikt deras stabilitet. Därför är det en mycket viktig uppgift att skapa lösningar och strategier förminskningsåtgärder som inte drabbar producentledet så hårt. Ett exempel på det andra är att ojämlikheter i angränsande länders anpassningsförmåga kan påverka säkerhetsbalanser i regionen. Därför är det viktigt med regionala såväl som nationella perspektiv på klimatbiståndet. Därigenom kan gränsöverskridande samarbete i utsatta regioner befrämjas så att anpassningen till klimatförändringarna sker med förtecken av samarbete snarare än konflikt.

Det faktum att minskningen av och anpassningen till klimatförändringar kan få säkerhetspolitiska konsekvenser bör inte leda till att man avstår från dem. Snarare måste dessa nödvändiga åtgärder utformas så att de bidrar till internationell stabilitet och inte till spänningar.

Övergången till alternativa energikällor kan påverka säkerhetspolitiken

På längre sikt kan även övergången från ekonomier baserade på fossila bränslen till alternativa energikällor komma att ses i ett säkerhetspolitiskt perspektiv. I händelse av ett framtida mycket spänt omvärldsläge skulle ledande aktörer kunna bedöma att övergången från ekonomier och försvarsmakter baserade på fossila bränslen utgör en säkerhetsrisk. Detta då man skulle vara rädd för att försvagas under en övergångsperiod. Därmed skulle ett spänt säkerhetsläge försvåra minskningen av klimatförändringarna. På motsvarande sätt skulle övergången

från fossila till förnyelsebara energikällor kunna ses som en säkerhetspolitisk investering. Det skulle emellertid vara olyckligt och problematiskt om traditionellt säkerhetspolitiskt tänkande och klimatanpassningstänkande skulle komma att länkas ihop. Det skulle kunna innebära att klimatanpassning antingen försummas till förmån för säkerhetspolitik. Anpassningsåtgärder, om de inte genomförs i multilaterala fora, skulle även kunna skapa ett mer spänt världsläge. Detta skulle kunna ske om olikheter i anpassningsförmåga leder till en ökad obalans i världen, inte bara mellan Nord och Syd utan även mellan stormakterna. I sin tur skulle detta kunna betraktas som ett säkerhetsproblem av de aktörer som ser sin ställning försvagas gentemot länder med bättre anpassningsförmåga.

En långsiktig övergång till andra energikällor än fossila bränslen är nödvändig. En utmaning ligger i att se till att detta görs gemensamt och i samarbete av världssamfundets medlemmar och undvika att det leder till konkurrens och osäkerhet.

Klimatförändringarna är en fråga för gemensam och odelbar säkerhet

Inom forskningen om internationell politik och säkerhetspolitik skiljer man på ”delbar” och ”odelbar” säkerhet. Delbar säkerhet baseras på en syn på säkerhet som ett nollsummespel, en vinst för mig, är en förlust för min granne. Så har traditionella säkerhetskalkyler sett ut. En uppfattning av säkerhet som odelbar innebär att ”en stats säkerhet inte kan skiljas från andra staters”.[8] För att säkerställa internationell stabilitet i framtiden måste en bred konsensus skapas om klimatförändringarna som en fråga för odelbar säkerhet. Det är viktigt att etablera en sådan förståelse snarast, eftersom klimatförändringarna kan komma att medföra stora påfrestningar såväl på stater som på internationella relationer i framtiden.

Med tanke på att klimatfrågan nu har tagit plats på den internationella dagordningen står vi idag inför en historisk möjlighet att etablera en sådan förståelse. Därför är det viktigt att den internationella diplomatin börjar verka i samförstånd i klimatfrågan. Genom att agera nu kan vi föregripa internationella spänningar, konkurrens och konflikter i klimatförändringarnas skugga.

[8] Adler 1998:119

1 Introduction

1.1 Setting the Scene

Of all the issues on the global political agenda in 2007, global warming and its associate, climate change, is truly one of those topics that do not require an introduction because they are so well-known. In this past year the topic has received great media attention around the globe from the United States, to Japan, from Sweden to South Africa. 2007 has also been the year when climate change was raised to the top of the agenda of mainstream politics, on national and on global levels. Not only have former sceptics of climate change, such as President George W. Bush, recognised the problem and the urgency of addressing it but the issue has also been debated in the Security Council of the United Nations (UNSC) as well as in the smaller circle of the G8. The European Union has begun to devise extensive policies not only of mitigation but also of adaptation to climate change and global warming.

With the move of climate change into the mainstream political optic and into the top level of government and global governance, the issue has rubbed off on one of the hallmarks of 'high politics', namely security politics. Acting on the initiative of the United Kingdom, the UNSC debated the topic from this perspective. Although not all members of the UN were positive to deliberating the issue in that particular forum, the connection between climate change and security seemed to have established itself in the political sphere. Within the scientific community, a great degree of familiarity and certainty has also been achieved. The latest reports of the United Nations Intergovernmental Panel on Climate Change, (IPCC), have now reached a state of unprecedented accuracy and certainty in their conclusions that the climate of the planet is changing.

Drawing on this extensive evidence of familiarity, one may indeed concur with the opening sentence of this report, that climate change needs no introduction and perhaps that previous gaps in our knowledge about it have been filled. According to this view, what now remains is further perfection of knowledge and political action. Somewhat surprisingly, this report argues the contrary, not least concerning the consequences of climate change for societies and states across the globe as well as for the international system itself.

Amid the certainty regarding those aspects of climate change that are studied by the natural and physical sciences such as meteorology and geography and the familiarity which the general public and politicians alike display concerning the phenomenon of climate change, a great degree of uncertainty still prevails

concerning the aspects of climate change that are best approached through the social sciences such as sociology, political science and international relations (IR). This uncertainty and lack of clarity, or indeed lack of an analytical framework with which clarity could be produced, is particularly pronounced in the interface between climate change and international security.

Such lack of clarity is disquieting, not only because of the gravity of both issues and of their possible interconnections but also because of the interactive nature of international security. As opposed to the proverbial perils of crying wolf that too many false alarms result in nobody listening when it is too late and the wolf is at the door, 'crying wolf' in matters of security always causes people to listen intently and both crier and listeners may by their mutual fears conjure up the wolf.

Therefore, this report aims to provide a framework for understanding and further researching and debating the security impacts of climate change, as well as describing the current state of research, in order to provide a map of possible consequences and to discuss the specifically political dynamics of security in relation to climate change.

Specifically, the report addresses the following research questions:

- Will climate change have a significant impact on world politics and affect global security politics?
- Will climate change have a significant impact on politics in regions of the world and affect regional security politics? If so which regions are likely to be affected?
- Will climate change have a significant impact on politics within states and affect their internal and external security politics?

This report extends until the year 2050, which is a very long time in the social sciences. The reason for choosing this date is that the changes in climate are not predicted to become substantial before this time. Some of the changes projected by the IPCC and other reports, such as the Stern Report, are of such magnitude and complexity that although fifty years is a very long time in some respects, substantial foresight is required in order to adapt to them. A long period of adaptation of states, societies and the international system may be necessary in order to deal with the challenges ahead thoroughly and in a way that is perceived as equitable by all parties concerned. The alternative, rushing changes and rapid adaptation may not only be more costly but also more destabilising to states, societies and international relations.

Naturally, this report makes no pretence at forecasting the political world in its entirety by 2050 as such a venture would be flawed at best and approaching

hubris at worst. Many of the features characterising international politics in 2007, such as the economic strength of South-east Asia, China and indeed Japan, the European Union, the territorially reduced Russia, satellite-guided warfare etc. were unforeseeable in 1957 and would have seemed improbable to most analysts and politicians of the time. Therefore, this report makes no pretence at forecasting political, social or economic innovations. Strictly speaking, from a methodological point of view, this makes this report of the world in the year 2050 anachronistic it projects our world in 2007 into the future of climate change. Regrettable as it may be from a strictly methodological point of view, this option is preferred here to the alternative, primarily because, the alternative of combining natural science forecasts with speculative social science would be worse than rigorous analysis of the social world as it is today combined with natural science forecasts. Whatever the flaws of the chosen method, this author believes that it is the least problematic of the alternatives at hand.

1.1.1 The Theoretical Framework of the Study

This study combines a number of theoretical perspectives in order to provide a comprehensive understanding of the interlinkage between climate change and international politics / international security. For a disciplinary point of view the study is grounded in International Relations (IR) theory but it makes no claim to exclusively be based on one school rather than another, e.g. it does not take sides in the long-standing debates on the relative merits of 'Realism' as opposed to 'Liberalism' but rather includes factors that the two 'camps' tend to emphasise. For example, organised, relatively large-scale violence is at the centre of interest of this study, which is reflected in its research questions. Privileging this aspect of societies and of politics might strike some readers as a 'Realist' trait. However, the study also considers trade and economy as highly important factors in determining whether the relations between states of a certain region will be bellicose or not. International institutions, ranging from 'thin' regimes like the WTO to 'thick' structures like the EU are also considered very important in determining what role organised violence will have on inter- as well as intra-state levels of politics. Although these factors may be seen as polarities in an IR context, they are integral to the (historical) sociological tradition ultimately harking back to Max Weber. Such a focus is also a trademark of the historical institutionalist strand within organisational theory.

Any reader familiar with the taxonomy of IR theory will identify the emphasis that the study places on intersubjective structures that constitute the scope in which social action occurs as reflective of a 'constructivist' heritage. Thus, within the theoretical repertoire of IR theory, the study seeks to cover as broad a

spectrum as possible in order to avoid the respective biases of the different traditions. In the study, this is done within a larger sociological framework that focuses on the generation of social action, again a highly 'Weberian' trait that was reinforced and explicitly outlined in the works of Talcott Parsons. The one aspect of the study that breaks with the Weberian-Parsonian heritage of the study is the use of Niklas Luhmann's Modern Systems Theory (MST) to conceptualise the bridge between natural systems, such as the climate system and social systems, such as the international political system. Luhmann's sociology departs from the classical sociological heritage in many ways, most notably for the peripheral part that agency plays in it. This study does not use MST to conceptualise phenomena on the level of action which avoids inconsistencies. Consequently, these combinations of the three main orientations within IR theory as well as the two principal strands in contemporary sociology, sociology of action and MST, have been chosen and designed to avoid biases and the partiality that any single one perspective would have entailed.

It should be stressed that this study does not deal with climate change per se but rather with its implications for international politics / international security. Therefore, it does not bring forward any new and / or substantial findings on global warming and climate change. Since the report has been written from the viewpoint of sociology and political science and not, say, meteorology, it will not discuss the methods of the IPCC. Nor will it direct criticism towards the findings compiled by the panel. The report differs from scenario-based studies and futurologist studies in the sense that is does not attempt to draw up a range possible future developments. Coming from a different scholarly tradition outlined above, the report seeks to understand the structural conditions that would enable or even determine a certain scope of possible actions.

1.1.2 Further Research

This study does not have the ambitions to have the last word on this undoubtedly complex and large subject. Rather, a number of possible and desirable issues for future studies can be distilled from the findings and the perspective of this report.

The following are some examples:

1. The role other macro-trends, such developments in technology and the demographic structure of the world, will play in connection with climate change in shaping tomorrow's world.
2. The role of adaptation technology, with particular regard to finding alternative energy sources in the international security environment until 2050.

3. How will climate change, both in terms of actual effects and in terms of expectations of change, affect the global security politics of the world's major players such as the United States, China, Russia etc. In other words, how will their relations to each other be affected?
4. What might the more specific effects of climate change on stability and prosperity in Russia be? 5) What could the more detailed consequences of a 'catastrophic' or 'worst-case' scenario of climate change be?

1.1.3 Guidelines for Readers

Something in the form of guidelines for reading this report may be appropriate. This report has been written with a wide and diverse readership in mind and therefore all parts may not be of equal interest or relevance to all readers. The two primary categories of users are, on the one hand, people active in policy formulation and policy advocacy and, on the other hand, scholars who take an interest in the connection between climate change and (international) politics in general and between climate change and violent conflict in particular. The disposition of the report reflects the differences between these groups and their needs.

Readers who are primarily interested in policy recommendations will probably find the conclusions in Section 5 best suited to their interests as these summarise the report in broad although not simplified strokes. Sections 1 and 2 are the most theoretical parts of the report and will probably be of most appeal to scholars interested in the subject. Specialists in a particular geographical or thematic area may find findings of particular relevance to their field in parts of Sections 3 and 4. Specialists may disagree with the arguments presented in these sections since they have been written by a non-specialist. Since one of the objects of this report is to act as a platform for more detailed studies, discussions and debates on the interface between the social and natural world in the shadow of climate change the hope is that any shortcomings will be seen as opportunities for continued inquiries rather than foreclosure of the debate. Having issued this description or, if you will, guidelines, it must be pointed out that the report is not only designed to be read as a smorgasbord, but is also intended to be approached in its entirety.

1.1.4 Climate Change as an Intellectual Challenge

It is often the case in intellectual puzzles that perspectives and findings are interdependent and the subject of this report is no exception. Some of the key arguments presented in this report result from critical examination of the

building-blocks of the problem at hand –the effects of climate change on international politics.

The complexity of the task at hand demands two conceptual clarifications in order to become manageable.

1. The way in which 'security' is defined matters for how the security impacts of climate change are to be understood. If one defines 'security' in a very wide sense then one recognises immediately the importance of climate change. However, such an approach renders it more difficult to draw structured conclusions. If a more restrictive definition is employed then one's conclusions can also be more specific.

2. The relationships between climate systems, other natural systems and international politics are highly complex. A number of misunderstandings about the security impacts of climate change can be avoided if close attention is devoted to scrutinising this condition. A proper understanding of the possible connections between climate and politics may serve to remove some of the imprecision in the current debate. The two sub-sections below deal with these two issues.

1.2 The Understanding of Security in the Report

The concept 'security' used in this report denotes largely 'traditional' military-political concerns. However, 'security' is not considered to be the exclusive domain of unitary states, since many other entities are active in the field, either as protagonists or as objects of security. In addition, security is not only about large scale territorial conflict of the kind that has become known as 'Clausewitzian' conflicts. Rather, the nebulous category of actions that can be summarised as international interventions as well as interactions between states and non-state actors are included. Adopting this as the vantage point may seem unusual in a report on geopolitics and climate change since there have been many calls since the 1990s to widen the concept of security, particularly with regard to environmental factors. There is a simple reason behind this choice and it is to provide a concentrated analysis of the effects of climate change on international politics in general and on international security in particular.9 Since the report concerns climate change and its effect on natural systems that which usually goes under the term 'the environment' in already included and its potential connections to security are already acknowledged. Furthermore, the report

[9] For a similar argument see Vayrynen 1998:12-15

acknowledges the powerful connections that exist between different social systems and policy areas. International security is connected to the sectors of economy, of finance, to aforementioned natural systems, to human security etc. It is connected, but for reasons of clarity the report assumes that it is a distinct and separate system.

One can also argue that there is justification in devoting a report to the possible consequences of climate change in the orthodox understanding of international politics in general and international security in particular. There have been many reports on climate change and its potential effects on the security of ecosystems (if indeed, it is meaningful to talk about their viability and survival in terms of security) as well as on 'human security' (i.e. the well-being, welfare and, ultimately, survival of human beings), but none that has systematically dealt with its potential effects on international politics/security.[10] Therefore, for analytical as well as pedagogic reasons a starting-point of this report is that politics, security, economy and ecology are systems that are separate but in some ways connected to each other.

On the basis of this understanding of security and arguments presented below the main argument of this report is that many of the adverse consequences of climate change on human and natural systems will not have security effects in a direct sense and only indirectly on the conditions underlying international politics. This perspective in no way denies the suffering and hardships that climate change might bring, consequences that are necessary to address. It does, however, stress that they may not be more than indirectly related to security concerns. In order to clarify and further the argument we have to take a closer look at the issue of causality.

1.3 How Does the Climate Affect Politics and Societies?

1.3.1 The Climate is not a Cause – It is a Condition

Some of the fundamental assumptions of this report have to do with the causality of climate change. Scholarly literature, political discourse and media coverage of climate change tend to portray it as a single phenomenon or set of phenomena that directly causes other events to happen. This automatic view is not shared by this report. Instead, here the climate is regarded as one of the conditions in which

[10] For a recent argument that environmental change should be conceptualised as an issue for human security see for example O'Brian 2006

human action - cultural, economical, political, social etc - takes place. Therefore changes in the climate may in turn alter some of the other conditions in which humans act. This report is interested specifically in political action. In order to clarify this argument and to make the distinction between it and views that imply an 'automatic' character of the relationship between natural phenomena and social action a brief expatiation on different theories of causal connections is necessary.

Ever since Aristotle the theory of science has distinguished between different kinds of causes.[11] The most common perception of causality is that of an event (a) directly preceding and giving rise to another (b). In the taxonomy of causation this is called effective or proximate causation. Sometimes it is called Newtonian causation, a name that reveals its intimate connection to the natural sciences as well as social sciences seeking to emulate the latter. Another type of causation is material or permissive causation, which signifies an event or process that enables, but does not directly lead to, other subsequent events. Permissive causes relate to their effects in the following way. The effect would not have been possible without the previous cause, but the effect did not follow with necessity from its cause. An example would be nationalism being a permissive cause of the mass mobilisation of World War One. Nationalism allowed mobilisation to occur but it did not lead to the war in a deterministic way. For an event that is the product of human action, to occur decisions have to be made. Such decisions are the products of human cognition and human volition. This means that in the realm of politics, things can always turn out differently, and that there is no simple determinism.

The climate, or to be precise, the different climate systems of the world, are important conditions for the scope of human action. Humans depend on a number of natural systems for their survival and for the stability of their societies. The degree to which they do so and the ways in which this dependence is expressed and managed varies greatly between different societies in history as well as across the contemporary world.

1.3.2 Climate Change will not Transform Political Systems – Political Systems will Interpret Climate Change

As noted above, climate change and global warming entered the mainstream political debate and mainstream media in full force during 2007. This entrance

[11] Concerning causation in Aristotle see Marc-Wogau 1996:179-182. For recent examples of reasoning in the social sciences that distinguishes between these two kinds of causation see Wendt 1999:165, 2002:6-8, Dessler 1989:453

was accompanied by speculations about climate change giving rise to 'new conflicts' or of drastic transformations of political structures. Some of these speculations took the form of visions of 'back to the past' scenarios of conflicts over land or of apocalyptic movies such as 'Mad Max' in which Mel Gibson's character traversed a devastated post-nuclear Australia where modern society had disappeared only to be replaced by quasi-tribal 'every man for himself' anarchy.[12] Even observers who avoided such hyperboles nevertheless presented arguments that implied that climate change may of itself introduce new conditions previously alien to the contexts in which they would appear. This report argues that this mode of thought builds on problematic assumptions of how socio-political systems change and of the relationship between nature and society. Climate change, or the effects of climate change (such as drought, sea level rise, floods etc.), will probably affect social and political affairs, including security interactions. However, the natural effects of climate change cannot introduce wholly new social conditions but will rather play into existing conditions.[13]

In order to ascertain whether climate change could change existing socio-political structures, including those relating to international politics and security, as well as the ways in which such a change could occur, two clarifications must be made. The first concerns the relationship between natural and social systems and the second concerns how change occurs in social systems. In the following, the relationship between natural and social systems will in the following be understood with the help of Modern Systems Theory (MST) as formulated by Niklas Luhmann.

This report argues that like other natural events, climate change does not have effects independently from socio-political contexts. Therefore, contrary to popular belief, one cannot say that changes in climate or effects of changes in climate will in themselves cause social and political events. Instead, the effects of climate change will vary with prevailing socio-political contexts within and between states. This is why any analysis must be based on an understanding of these. To clarify this argument and to address the question of whether climate change will lead to new conflicts in a sociologically rigorous way, an excursion is required into thinking about the generation of action.

[12] The similarity of the imagery in resource scarcity scenarios to the movie the 'Road Warrior' have also been noted by Matthew, Gaulin, and McDonald, 2003:866

[13] It is erroneous to believe that social and political systems are or can be transformed by external factors. Rather all changes, including those for which the proximate causes are 'external' occur on the basis of existing conditions.

Armed conflict is, basically, a kind of human action and sociological thinking has for over a century been occupied with the problems of why people act and what makes them act in the ways that they do. These problems are usually addressed in terms of the generation and direction of action.[14] In turn, it must be stressed that human actions are events that can be expressed and understood in intersubjectively meaningful ways.[15] Indeed, intersubjective understanding is necessary for action to take place at all. This means that action is always connected to systems of beliefs and ideas about the world and that rational human action always proceeds from purposes or motives of some kind. These purposes and motives in turn are derived from what we may call social and political systems.[16] For example, paying taxes is an action that presupposes a great number of socio-political systems in order to be meaningful; such as the state, notions of citizenship and obligations etc. Changes in socio-political systems will also change the meanings of actions, for instance the introduction of welfare provisions changed the extraction of taxes from amounting to little more than protection money to something more like investment in a mutual insurance fund.

When studying climate change, however, we are interested in what kind of actions may be generated by changes not in socio-political systems, but in natural systems. In this regard social theory faces an unusual puzzle since it is conventionally concerned with how social causes generate social effects. However, in contrast to previous arguments in the field of environmental security, we argue that the connection between natural causes and social action cannot occur in an unmediated way.[17] The idea that human beings act directly upon changes in nature is based on false assumptions about action, cognition and nature. All occurrences in natural systems must be interpreted through a socio-political context in order to acquire meaning and thereby to become the focus of human action.

The relationship between natural and social systems can be usefully clarified by using the terminology of Niklas Luhmann, and Modern Systems Theory (MST). MST conceptualises the world in terms of discrete functional subsystems, such as law, politics, economics etc. These systems are closed systems that operate

[14] Parsons 1968
[15] This view is, of course essentially that of Hans-Georg Gadamer for an expatiation see Gadamer 2004
[16] See for example Scott 2001
[17] For example, Deudney 1999 argues in favour of the view that natural causes can produce social effects

according to their own logics.[18] Systems are also 'autopoietic', which means that, like living organisms (in Luhmann's terms, 'physical systems') they reproduce themselves. Although autonomous, functional subsystems are connected to other systems in their environment by means of 'structural coupling'. Since each system is closed, events that occur in other systems have to be translated into the terms in which the social systems in question (e.g. politics, law) operate in order to become intelligible.[19] Intelligibility, as argued above, in turn is necessary for action to be generated. In Luhmann's view, systems observe other systems in their environment and react to changes in them, but they do so according to their own logic. This means that the social and the natural world can be conceptualised as two closed 'functional subsystems' and that the social subsystem observes natural systems, such as the climate system, and reacts to it according to its own logic. In the terms of the present report, the conception of 'social system' as a functional subsystem as opposed to 'natural systems' encompasses political, legal, social (in the more strict sense) systems, in other words, systems that rely on human cognition and volition.

This conceptualisation provides us with a much stronger epistemological foundation for understanding the relationship between the social and the natural world. It also enables us to recognise that changes in natural systems have to be interpreted, in the widest sense of the word, in order for social systems to be able to act upon them. It is easy to understand that a predominantly agrarian society in which the majority of people survive on subsistence farming, reacts to (or in MST terms, interprets) a drought differently from an advanced industrial society with a well-developed division of labour, mechanised irrigation systems and market mechanisms (both domestic and international) for the procurement and distribution of foodstuffs. In other words, different socio-political contexts give rise to different interpretations of natural events and give rise to actions towards them.[20] It should also be noted that different socio-political contexts produce different effects on natural systems. Climate change is of course a good example of this since it the changes in the climate system (a natural system) are reactions to the fossil fuel emissions produced by a historically particular system, namely industrial civilisation.

[18] For a good overview see Bania-Dobyns 2005:14

[19] Luhmann 1995 & 1997

[20] It should be noted that some natural events, like volcanic eruptions, have a very strong impact on societies. However, their effects will vary according to the characteristics of the selfsame society, both with regard to socio-economic impacts and how the society in question interprets it (e.g. as the wrath of the gods or as a profane natural phenomenon).

In less abstract terms, this argument means that the kind of consequences that climate change effects will have on a certain country varies with several socio-political factors. Examples that will be studied in this report are: state-society relations in a country, the kind of regime the country has (e.g. democratic, authoritarian, patrimonial), the kind of relations the country has with its neighbours, whether there are deep fractures in the society and whether there is latent or actual internal strife in the society. Consequently, this report's analysis of the potential for conflict in different regions of the world is based on the histories of the respective regions. The main thrust of this argument is, hence, that climate change will not give rise to new conditions or actions in an 'automatic' fashion. Rather, it will play into dynamics and structures that exist in the regions and in the time when they occur. This argument is first and foremost applicable to initial reactions of socio-political systems to climate change. The following paragraphs expand more fully how socio-political systems may change in connection with climate change.

This argument can be clarified by allowing ourselves a counterfactual mental experiment and assuming that climate change occurred in the world of the nineteenth century.[21] During this time, the international system was dominated by a few European empires whose mutual relations were characterised by balance of power and great power rivalry. Their attitudes towards extra-European peoples ranged from bare tolerance (e.g. the Japanese) through condescension to cruel racism. Under such an international system, a country in, say, Africa, hard-hit by poverty, instability and a worsened climate (e.g. sea level rise, drought and water stress) would probably not be the target of peacekeeping operations and foreign aid operations. Instead, it would probably be abandoned by its colonising overlord and left to its own devices. On the European continent, great power politics would probably sharpen and full-scale inter-state wars would be a real possibility. The reasons why these developments were likely to happen in our hypothetical nineteenth century would be embedded in the international political system as well as in national political contexts of that age.

In contrast, the basic institutions of today's international system on both global and regional levels are very different from those of the nineteenth century. This means that the effects of climate changes in the near future will take place in this context rather than produce a new context altogether. Any future changes in socio-political contexts, either on a micro-level, i.e. within particular states, or on the macro-level, i.e. in the international system as a whole, in which climate change may play a part will be gradual modifications of today's conditions.

[21] For an overview of counterfactual reasoning in history and political science see Lebow 2000

For these reasons, simple 'back to the past' scenarios are unlikely to materialise. Since we have different systems of resource allocation, communication and co-ordination and diplomatic relations than in previous historical periods, international politics will not revert to historical interaction patterns, peaceful or conflictual, simply because of changes in natural systems. For that to occur, political and social systems would have to change first.[22] This is not to say that climate change cannot change political and social systems (such as the international system) in a more conflict-prone direction. However, the possibility span of such changes will be determined by today's structures.

The importance of human cognition, volition and decision also means that the way in which political actors perceive changes in the climate and in the politics of climate change also matter greatly to the outcome. If major actors, i.e. states, perceive climate change as a prelude to military conflicts and begin an arms race, then that course of action will trigger similar reactions among their neighbours and lead to a worsened security dynamic. On the other hand, if climate change is portrayed and acted upon as a series of natural phenomena that have to be adapted to by means of enhanced civilian diplomacy, foreign aid, technology transfer etc. then the deteriorating security dynamics will not occur by themselves.

The argument presented above mainly proceeded along a static formula: Changes occur in natural systems, they are observed by social systems which in turn act according to their own logics. Although the relationship between natural and social systems has usefully been conceptualised in terms of closed systems that require a translation of external events into their own terms to be able to act, one must also be open to a conceptualisation of systems as dynamic. In other words, although systems operate on their own terms, they are also subject to change.

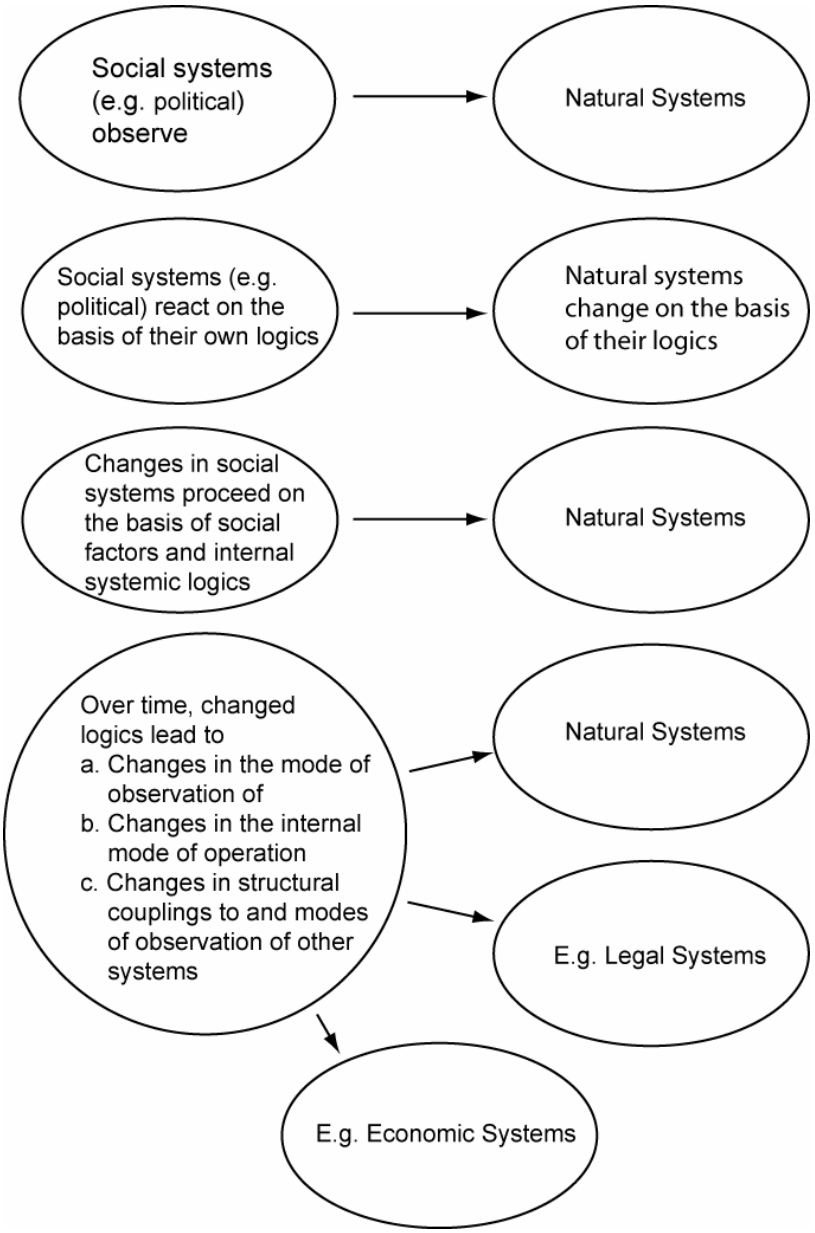
The need to react to changes in natural systems, such as those that will result from climate change, is in itself a change in the social system. In other words, the reaction in itself is a change. The argument presented above, that actions will proceed from social, not natural systems, still holds true but with an important caveat: The social systems that direct actions will themselves change, often slowly and in imperceptible ways, but sometimes in drastic and turbulent ways.

[22] From a scientific point of view, this analytical problem illustrates the ceteris paribus fallacy, which consists in believing that one and only one condition is different between two observed phenomena. In the case of arguments that climate change directly leads to 'resource wars' the different condition between our more peaceful age and previous ages in which conflicts over land occurred would be 'scarcity of arable land'. Changes in this condition would, according to the argument, lead to a reversal of conflict patterns of a previous age. However, this line of reasoning ignores or downplays the numerous differences between the socio-political institutions of the two contexts.

Therefore, the argument that (re)actions to climate change will proceed from the socio-political systems of today will hold true in the near but not in the distant future.

It is well-nigh impossible to foresee what changes will occur in socio-political systems due, strictly speaking, to reactions to climate change, but it is probable that change will occur. This is another reason why this report deals with a relatively short time-span. Whether socio-political systems around the globe and the global system of international politics will change substantially within the time-frame covered by this report (~50 years) is difficult to say. Change, either (and probably) cumulative or in sudden bursts of events, that alter the socio-political structures of today to different forms may occur within the span between 2007 and 2050 or outside it. In strict terms, therefore, this report should be understood as dealing with initial reactions and responses to climate change. Over time however, political and social structures will change and new patters of action will thereby be generated. Whether such patterns will take the shape of a greater or reduced proneness to violent conflict, we cannot say. The main point is still that such changes in the patterns of action require prior changes in socio-political structures, and that will probably take time. The diagram overleaf illustrates the argument and the conceptualisation.

The relation between social and natural functional subsystems



1.4 Summary

To summarise, this section advanced the following three interrelated arguments. They have two functions, firstly forming the basis of the perspective of this report and secondly in their own right constituting arguments about climate change and security:

1. For reasons of analytical clarity, we understand 'security' is understood here to be the politically mediated actions undertaken to affect the viability of organised social units, primarily states, but in some cases non-state entities. The actors seeking to affect the security of a state or other group do not have to be a state, but can be other kinds of organised groups as well. However, this report focuses particularly on states as actors as well as objects of security.
2. The climate is a conditioning factor – a permissive cause – of human action, not a deterministic, effective cause. This means that the report deals with how the conditions of international politics may be affected by changes in global and regional climates. It does not deal with social and/or political events that the climate causes in a direct sense. Furthermore it means that climate change in itself does not determine political actions. Thus, the climate is in itself not a threat and certainly not one that can be countered by military means.[23] It is a condition to which adaptation is necessary but whether military preparations are a necessary part of the process of adaptation is decided by political circumstances and by political actors, not by the climatic system.
3. Social and political actions proceed from social and political systems. Natural systems, such as climate systems, do not influence human action directly but are mediated through the political and social systems that already direct actions. This argument entails that in order for a world characterised by climate change to develop in a stable and less conflict-prone way, there will have to be are vital international and national (state) institutions that ensure that political divisions and conflict do not take the form of violent interaction between states or sub-state actors.[24]

These three arguments are advanced with the intention of reducing the complexity of the problems that the present analytical task entails. Section 2.3 introduces a further complexity-reducing tool, a regional framework for analysing security interactions developed by Barry Buzan & Ole Wæver (2004). The purpose of using this model is to outline the regional patters of security that exist in today's world as well as the connections firstly between different regions and secondly between regions and the global level of politics. Section 2 outlines

[23] I owe this point to Mikkel Vedby Rasmussen
[24] A similar perspective underlies Clark 2007 see in particular pages 2, 15, 17-18

the three parts of the analytical toolkit from which the analyses in Section 3 are constructed: Scenarios of climate change, geopolitical theories and a framework of regional security interaction. Section 3 analyses the security regions of the world in relation to issues concerning the links between climate change and violent conflict. Section 4 deals with some specific issues relating to the interface between climate change and international security. Section 5 summarises the report and outlines some strategic policy recommendations and suggestions for further research.

Since there is a substantial overlap between certain thematic issues and regional concerns certain issues that could have been singled out for sections of their own are discussed at length together with regional sectors in which they feature prominently. For instance, water issues are discussed in the section on the Middle East in a way that has a general bearing on the issue. An example of the converse, namely thematic treatment of a regional issue is found in the discussion on the Arctic in Section 4.2, which discusses at length issues of relevance to Russia and the Nordic countries.

2 Theoretical Framework

2.1 Introduction

This report may appear unusually theoretical compared with other reports on climate change and security. This is a trait that can be regarded as a particular strength in relation to the subject matter. Many of the uncertainties about climate change and its (potential) relationship to social systems and politics in general and to security systems and security politics in particular stem from a lack of clarity not only about the future form of climate change and its consequences for natural systems but also about the links to social systems and those between social systems. Due to the daunting complexity that any serious study dealing with climate change faces a clear and concise framework is necessary in order to reduce this complexity and to begin to render it intelligible. Without a framework that separates socio-political systems from one another and that outlines how they are connected it is difficult to distinguish small and local effects from large regional or even global effects. Not to mention the difficulty in ascertaining whether large and local effects really have wider consequences or not or. Even more important is the ability to ascertain whether relatively small and local climate effects can have very large international consequences. Without this ability concrete and hands-on policy-formulation and decision-making becomes seriously hampered. Hopefully and probably this study will not be the last of its kind and this report is not written with the intention of having the last word on the subject. Rather, the ambition is to sketch a framework for studies and debate on climate change and security. As such, we hope that this study will be succeeded by far more elaborate and detailed future research.

The following section outlines the theoretical toolkit of the report and does so by connecting each element to distinct issues around which uncertainty prevails. Each set of theoretical elements is connected to a set of research questions, all of which flow from the overarching question of the relationship of climate change to geopolitics/international politics. The theoretical framework of this report consists of the following elements:

1) Scenarios of climate change, principally those of the IPCC. 2)social-science perspectives that deal with the connection between natural systems and geography on the one hand and social and political system on the other. These include classical geopolitical theories and the security studies sub-field of environmental security. 3) A region-based approach to security politics that differentiates between intra-regional, i.e. between states and sub-regions, inter-regional and global dynamics and connections. The analyses that form the lion's

share of this report are based on this framework. Two key methodological issues are also dealt with below. The first issue deals with the challenge of combining natural and social sciences, while the second is how to conduct regional analyses on the basis of the IPCC scenarios of climate change, which themselves build on assumptions on future socio-economic developments. The sections below are used to deduce a number of specific research questions which are more precise formulations of the general questions stated in the introduction above.

2.2 Scenarios of Climate Change

The basic mechanism of global warming was first discovered in 1827 by the French mathematician Jean-Baptiste Fourier who noted the similarity between the atmosphere and a greenhouse. Both produce and retain heat by preventing incoming energy from the sun from radiating back. There is, however, an important difference in that a greenhouse prevents the hot air from escaping while the greenhouse gasses (primarily carbon dioxide, CO_2) absorb the long-wave heat radiation which is sent back to the earth's surface. Global warming was first recognised in 1896 by the Swedish chemist Svante Arrhenius who argued that a doubling of the carbon dioxide in the earth's atmosphere would lead to an increase in temperature by around five to six degrees Celsius.[25] Beginning in the late 1950s, Charles Keeling was the first scientist to conduct repeated measurements of the CO_2 levels in the atmosphere and in the sea. His work demonstrated rising concentrations of CO_2 based on measurements in California, Hawaii and at the South Pole.[26]

Initially, there was substantial controversy regarding whether changes in the earth's climate were anthropogenic or driven by 'natural' causes such as solar patterns or whether the current warming is simply a warm spell in a system characterised by cyclical variation. However, apart from a few voices of dissent, scientific consensus has been established that we are experiencing a long-term warming of the earth's climate due to the anthropogenic release of greenhouse gases, primarily carbon dioxide and methane into the atmosphere since 1750, the start of the industrial revolution.

Today, the main body responsible for synthesizing the most recent climate science findings is the Intergovernmental Panel on Climate Change (IPCC). The task of the IPCC is to "assess on a comprehensive, objective, open and transparent basis the scientific, technical and socio-economic information

[25] Woodford 2002:256

[26] See Scripps Institution of Oceanography, La Jolla, CA http://scrippsco2.ucsd.edu/research/atmospheric_co2.html accessed 20070417

relevant to understanding the scientific basis of risk of human-induced climate change, its potential impacts and options for adaptation and mitigation" (IPCC 2007). The IPCC does not carry out research itself nor does it monitor climate related data or other relevant parameters but bases its assessment mainly on peer reviewed and published scientific/technical literature. The IPCC issues reports that represent the current consensus of the scientific community regarding climate change. Therefore, its work is central to the present report. The IPCC was established in 1988 by the World Meteorological Organization (WMO) with the support of the United Nations Environmental Programme (UNEP). IPCC's assessment work is mainly organised in three working groups. They prepare reports on the available scientific aspects of the climate system and climate change (working group one, WGI), on the impacts, adaptation and vulnerability of climate change (WGII) and on the options to mitigate greenhouse gas emissions (WGIII). The reports of the IPCC are written by a team of authors who are all selected experts in their fields. Each report is subject to a first review by scientific experts and a second review by experts and governments.[27] The first IPCC assessment report was in 1990 published and subsequent reports were published in 1995, 2001 and 2007. Each report has noted with increasing conviction that global warming is taking place, and that it is due anthropogenic causes and that it will have serious and far-reaching consequences.[28]

The reports of the IPCC deal with future climate changes based on scenarios of future carbon emissions.[29] There are a total of forty (40) scenarios that belong to six scenario groups[30] deriving from four scenario families, the A1 family, the A2 family, the B1 family and the B2 family. Each scenario family derives from a narrative storyline which is a compound of different demographic, social, economic, technological and environmental developments. The storylines describe different worlds that consume different amounts of fossil fuel, and therefore emit different levels of greenhouse gases into the atmosphere, based on the kind of technology used and patterns of production and consumption.

For a number of reasons, the analyses in this report are not directly based upon individual climate change scenarios. Firstly, the reports of the IPCC (WG III) which are an important source of the analysis do not clearly distinguish clearly

27 For details see Procedures for the Preparation, Review, Acceptance, Adoption, Approval and Publication of IPCC Reports 2003 from http://www.ipcc.ch/about/app-a.pdf access 20070416

28 As stated by the IPCC in 2007 "Warming of the climate system is unequivocal, as is now evident from observations of increases in global average air and ocean temperatures, widespread melting of snow and ice, and rising global mean sea level". International Panel on Climate Change Climate Change 2007: The Physical Science Basis Summary for Policymakers p.4

29 For the methodology used in these scenarios see IPCC 2000

30 These are A1FI, A1T, A1B, A2, B1 and B2 IPCC 2000:4

between different scenarios in their descriptions of the effects of climate change on natural and social systems. Second, in many cases the differences between the emissions scenarios, e.g. in terms of temperature and precipitation, are very difficult to translate into differences in political consequences. Instead the analyses are based on the IPCC texts that refer to the qualitative effects of climate change, primarily those of Working Group III, which in turn refer to middle-range scenarios (A2). The differences between scenarios that assume continued or even increased fossil fuel use, leading to a rapid increase in emissions, and scenarios that assume a development characterised by, a more modest increase (or seen in a long-term perspective, even a decrease) in fossil fuel use that leads to a slower increase of the emission rates are accommodated in the report in two ways: Firstly in the sub-sections 'Consequences of mitigation – adaptation measures' in some regional analysis in Section 3 and secondly by analysing the consequences of different scenarios in the Conclusions section.

The IPCC does not assign probabilities to the scenarios (all scenarios are treated as equally sound) and nor does this report. Instead, our policy recommendations, whether they occur in the studies on individual regions, in thematic studies (for instance Section 4.6) or in the conclusions (section 5) are based on the precautionary principle.[31] This principle can briefly be said to operate on the grounds that '…attention should be paid to potential threats and preventive measures planned even when scientific evidence is not entirely conclusive[32].' In laymen's terms, the principle translates to the idea that if a risk is significantly large, then the prudent choice is to prepare for it. We understand the precautionary principle to be useful not only because of its long-standing association with environmental issues but also because of its usefulness in preparing for large-scale, high-intensity threats.

2.2.1 Non-linear Effects of Climate Change

Climate change is not only about global warming that proceeds in a linear fashion. [33] The warming of the Earth's climate also entails the risk of several events that are refered to as 'tipping points', 'independent drivers' or 'non-linearities'. They all have in common the fact that they have the ability to trigger off further developments, in some cases an amplification of global warming and

[31] For statements of this principles see e.g. The European Environment Agency 2001
[32] See Woodford 2002
[33] Schneider (2004) argues that more attention should be paid to the possibility of non-linear climate change events and to potential irreversible effects and that policy-makers should avoid excessive focus on linear projections since they give a misleading view of the full potential of climate change.

in some cases other ‘non-linear’ events. The most problematic aspect of the ‘independent drivers’ is that once triggered, they can amplify each other thus producing a situation that measures undertaken by human societies can do little to control or contain. It is difficult to ascribe probabilities to these events occurring, but it is noteworthy that the history of the climate system shows that the Earth's climate can change rapidly and abruptly.[34] However, the difficulty in making projections of non-linear events does not however, mean that these events should not be taken seriously.[35]

It is not possible to outline in detail the consequences on international politics of these events, because they are highly drastic and in some cases operate over a long period of time. However, we found it necessary to deal with some of these effects in order to convey a more comprehensive overview of climate change and to stress that if these events are triggered then the likelihood of the more extreme scenarios increases. As this likelihood increases, so does the likelihood of large-scale territorial changes.

2.2.2 Deterioration of the West Antarctic Ice Sheet (WAIS)

Warming of the Southern Ocean has the potential to initiate an increasing loss of ice from the WAIS. The WAIS contain the equivalent of about 6 metres of sea level rise. Massive melting of the WAIS could alter ocean circulation and have significant effects on weather. This is a long-term process but strong global warming could spark it off by the end of this century.[36]

2.2.3 Thawing of Permafrost and Tundra

The warming of the Arctic will lead to a thawing of the permanently frozen ground (permafrost). This could lead to the release of methane, a more powerful greenhouse gas than carbon dioxide, as well as oxidation of peat. This process could substantially amplify global warming since permafrost land contain at least as much carbon as the present pool in the atmosphere. A further independent driver effect of the ice melt in the Polar Regions is that albedo, reflection of the suns rays, decreases. In layman's terms, ground covered by ice reflects heat into the atmosphere while bare ground absorbs it, thereby increasing temperatures.

[34] WBGU: 2007b:77, citing Ramsdorf 2002
[35] WBGU 2007b:78
[36] Scientific Expert Group on Climate Change 2007:22

2.2.4 Weakening of the North Atlantic Current (thermohaline circulation)

The melting of the Polar ice caps could cause a weakening of the thermohaline circulation in the North Atlantic, often referred to as the Gulf Stream, due the influx of fresh water. The risk of this occurring cannot be quantified but leading experts estimate that the circulation is 'very likely' to be weakened, although not halted during this century. The critical factor is how high the mean temperature will become. A recent study shows that experts calculate that an increase of 3°C above pre-industrial levels will lead to 10% risk of a weakening of the thermohaline circulation. If temperatures were to rise by 5° C, half of the experts consulted stated a risk of 20% or more while a third stated a risk of 50%.[37] It is very difficult to estimate the consequences of a shift in the ocean circulation but the expected cooling of the North Atlantic area, particularly Europe, could be offset by rising temperatures due to global warming. What is clear, however, is that other effects, for example, consequences on food security and living conditions in the North and the tropics could worsen, as a consequence of an additional one-metre rise in sea level and shifts in precipitation patters in the Tropics.[38]

2.3 Geopolitics and Political Geography

In the broadest sense, geography is the discipline that studies the interface between natural and social systems, such as the economy, agriculture and city planning to name but a few of the fields of human activity affected by adaptation to climate change. The more specific interface between geography and politics is in turn covered by the sub-discipline political geography and by its sibling and sometimes rival, geopolitics. There are also other areas within the historical and social sciences that deal with the connection between geography and political events, for example the works of certain economic historians[39] and the French annales school[40], but geopolitics remains the main source as well as the most useful umbrella term for this kind of study. Since the task of this report is to chart the winding trail from natural science to security politics, the itinerary sketched above is the most expedient road to take.

[37] WBGU 2007b:78
[38] WBGU 2007b:78-79
[39] For an example see Jones 2003.
[40] The best known example is probably the works of Fernand Braudel. See for example Braudel 1995

The term geopolitics can be understood and employed in a number of different meanings. It can denote a historical school of thought; a normative perspective, principally on American foreign policy; the global level of world politics, understood as the highest of 'high politics' as well as the most geographically encompassing; and it can be understood as a perspective that grounds analyses of security politics in a territorial dimension (i.e. the location of states) and that accounts for the impact of geographical factors. It is in the two last senses that the term is used in this report. Geopolitics in the sense of a particular domain of international/security politics, that of global strategies, and climate change are dealt with in a specific sub-section below. However, geopolitics in the sense of a territorially grounded perspective on security and international politics rather pervades analyses throughout the report.[41] The next section outlines the analytical framework centred on regions that is used to structure the subject matter.

But what are the historical roots of the concept of geopolitics?[42] And what importance do climate factors have in it? The term geopolitics, or Geopolitik, was coined by the Swedish political scientist Rudolf Kjellén.[43] He defined it as the theory of the state as a geographic-spatial phenomenon;[44] the concept of a state, according to Kjellén, presupposes some kind of territorial, geographically existing entity.[45] Thus, the geographical location of a state should, to a substantial extent, determine its security policy and strategy. The fact that most states have neighbours towards whom they need to relate – e.g. as friends or enemies – is perhaps the simplest form of this condition.

The most renowned of the early geopolitical theorists is probably the British geographer Sir Halford Mackinder. To Mackinder, although geography was only one of several power bases for a state in world affairs, geographic location and natural resources were paramount factors in determining both the power base and the foreign policy of a certain country. In his view, the actual world balance of

[41] Geopolitics in this sense is the study of geographical factors as a part of politics, primarily international. This understanding is close to that of Parker (1998:5) who argues that geopolitics is "the study of international relations from a spatial or geographical perspective". Geopolitics does not have to be understood as a school of thought or allegiance to a school of thought but can rather be seen as a 'mode of analysis, relating diversity in content and scale of geographical settings to exercise of political power, and identifying spatial frameworks through which power flows' (Cohen 2003:12).

[42] Substantial parts of this subchapter are based on the discussion in Winnerstig 2000, ch. 4.

[43] See e.g. Kjellén 1916. Kjellén was a Swede and a professor of Government at Uppsala University. However, he was also a conservative member of the Swedish parliament and took, as such, German-friendly positions; this is probably why he, wrongly, is thought of as a German in much of the Anglo-Saxon literature on the subject of geopolitics; see e.g. Deudney 1997:95.

[44] Kjellén 1916:39.

[45] Kjellén 1916:44.

political power at any given time was 'the product, on the one hand, of geographical conditions, both economic and strategic, and on the other hand, of the relative number, virility, equipment, and organization of the competing peoples.'[46]

Mackinder's thinking was in many ways similar to realist theories of international relations. Realism, a highly pluralist school of thought in the discipline of international politics, has traditionally and about until the 1980s been its dominant theory. It deals first and foremost with issues of power, balances of power and international anarchy, i.e. the lack of a world government that could provide for laws and law enforcement among nations.[47] Closely similar to Mackinder, the current, very prominent realist Kenneth Waltz argues that the power of a state is dependent on 'how [the state scores] on all of the following items: size of population and territory, resource endowment, economic capability, military strength, political stability and competence.'[48]

Nicholas Spykman, a Dutch-American professor of international relations at Yale University, furthered the geopolitical approach to world affairs during the early 1940s. Although Waltz does not mention the works of Spykman in his own writings, their views are strikingly similar. Spykman argued, without labeling himself a realist, that international society is 'a society without a central authority to preserve law and order, and without an official agency to protect its members.'[49]

Geopolitical theory has traditionally been used as part of, or a complement to, realist analyses of international relations and politics. Since geopolitical concepts often has clear-cut relevance for policy-makers – such as pointing out certain areas of the world as being particularly geopolitically crucial – it has often been regarded as more 'policy relevant' than realist theory proper, which can and has been formulated as a very abstract theory.[50]

During the last 30 years or so, there has been a huge debate about the virtues and shortcomings of realist theory in the discipline of international relations/international politics. We will not go into this debate here, but instead

[46] Mackinder 1904/1996:192.
[47] For an in-depth presentation and analysis of different forms of realism, see Winnerstig 2000, ch. 4.
[48] Waltz 1979:131.
[49] Spykman 1942:7. Cf. also ibid.:41: .In a world of international anarchy, foreign policy must aim above all at the improvement or at least the preservation of the relative power position of the state.'. Cf. Waltz 1959 ch. VI-VII and Waltz 1979.
[50] For an example of the first form of usage, see Winnerstig 2000. For the most elaborated, abstract form of (neo)realism, see Waltz 1979.

focus on the linkage between climate factors and geopolitical theory. This will, in its turn, enable us to draw conclusions about what hypotheses could be derived from geopolitical theory if dramatic climate change occurs.

Climate factors form, in fact, a basic building bloc within geopolitical theory. Mackinder, with the realist's typical penchant for materialism and cynicism, observed that the great wars of history "are the outcome, direct or indirect, of the unequal growth of nations, [due to] the uneven distribution of fertility and strategical opportunity upon the face of the globe."[51] Fertility, at least in terms of agriculture, is obviously a highly climate-dependent issue and although Mackinder – as most theoreticians of the early 20th century – did not elaborate extensively on climate factors, they were still there.

Spykman explicitly set out to develop the geopolitical approach by modifying and enhancing older geopolitical thinking, above all Mackinder's theories.[52] He saw geopolitics as an analysis of the interconnection between realist theory and geographical factors. In the international power struggles, Spykman regarded geography, because of its permanency, as the most fundamental factor forming foreign policy in an anarchic world.[53]

Spykman's view of the role of geography was more nuanced than the views of many other geopoliticians. He argued that in contrast to a mere geographical approach, a geopolitical analysis must deal with a dynamic rather than a static situation: geopolitical regions of the world are not determined by geography alone, but also by the dynamics of the balance of power.[54] Given these dynamics, consisting of political and technological shifts, Spykman concluded that although geographic facts will not change, their significance for foreign policy will.[55] However, while it is well known that Spykman treated geography per se as a factor of utmost importance for a state's security strategy, the centrality of climate factors in his thinking has largely been forgotten. In fact, the whole thrust of Spykman's geographical argument is to a large extent based on climate factors:

[51] Mackinder 1919/1996:1-3.
[52] Spykman 1942:8, 446.
[53] Spykman 1942:41.
[54] Spykman 1944:6.
[55] Spykman 1944:7.

> *The geographic location of a state in the world is of basic importance in defining its problems of security. It conditions and influences all other factors for the reason that world locations determines the climatic zone and thereby the economic structure, and regional location determines potential enemies and perhaps even the limits of a state's role in a system of collective security.*[56]

For Spykman, the power of a state was essentially a function of its military power and the nature of its territorial base, i.e. geographical location and size. Both the latter factors were, in his view, modified by two other most important issues. In the first place, topography determines e.g. the ease or difficulty with which one can export one's goods or defend one's borders. In the second place, since climate factors affect transportation issues and set limits to agricultural productions, the climate of a country "conditions the economic structure of the state and thus, indirectly but unmistakably, its foreign policy."[57] The economy-agriculture linkage was based on the importance of a temperate climate and rainfall adequate to the production of wheat or rice. These crops, according to Spykman, provide the agricultural basis for the power of any state, and a region or country which lacks these elements 'finds itself doomed to play a secondary role in the power relations of the world'.[58]

This might sound a bit old-fashioned in today's globalised world, where both wheat and rice can be bought and imported with ease. But Spykman made a case for climatic primacy in geopolitics that still contains interesting insights. He excluded consciously as zones of power those areas whose climatic conditions – especially in terms of agricultural conditions – were not suitable for the growth of large populations and, subsequently, strong states. [59] In his proto-realist view, strong states with a temperate climate enabling them to attract and feed large populations, were obviously the movers and shakers of the world. Thus, he concluded, 'history is made in the temperate latitudes, and, because very little of the land mass of the Southern Hemisphere lies in this zone, history is made in the temperate latitudes of the Northern Hemisphere.'[60] Spykman treated the same areas that Mackinder found the most important in a similar way; Eurasia and North America were to him, for a host of geopolitical and hence climatic reasons, the strategically most important areas in the world.[61]

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[56] Spykman 1944:23.
[57] Spykman 1944: 5.
[58] Spykman 1944 28.
[59] Spykman 1944:28.
[60] Spykman 1942:42.
[61] Spykman 1942:42, 98f.

We may now draw a number of conclusions. In the first place, climate factors played a very important but today largely forgotten role in the geopolitical theorists of the early 20th century. Secondly, even if they – especially Spykman – wanted to inject more dynamism in the geopolitical approach, they never speculated in that most dynamic prospect of climate change; all of them took for granted that the climate of a region or a country was virtually as stable as its geography. One of the fundamental, key issues to explore in this report is thus which consequences climate change – i.e. quite dramatic climate change – would have for international geopolitics.

Some concepts inherited from geopolitics as a distinct body of theoretical writings on international politics are employed in the report, albeit in modified form. One such concept is that of 'pivotal states'. In this report, the term denotes a state whose regional importance is of such magnitude that changes in it will have reverberations across the region. Daniel Esty has connected environmental degradation to the notion of pivotal states. In his analysis the older concept of pivotal states, states whose position may determine regional or even global balances of power, is combined with an analysis of the effects that environmental degradation may have on the stability of some states considered to be 'pivots'.[62] This report will focus on states that play important roles in their respective regions and on how they may be affected by climate change. This subject is dealt with in the regional studies below and in section 4.6 'International Interventions in a World with A Changed Climate'.

The word 'pivot' may give a sense of determinism, but it is not used in this strong causal sense in this report. It is rather used to denote a region-wide influence that is sometimes connected to political agency, i.e. conscious political acts by its leading politicians, and sometimes not, e.g. economic and cultural influence or processes on micro- and meso-levels that cannot be easily controlled by the political level. The notion of a pivotal state helps us to conceptualise that certain states have stabilising and/or growth promoting effects on their immediate regions if and when they are strong whereas their weakness may have effects that destabilise and reduce economic growth in their regions.

2.3.1 Environmental Security and the Effects of Climate Change

Research within the field of 'environmental security' has focused on investigating causal links between environmental change, primarily degradation, and violent conflict, either in the form of full-scale wars or conflicts of lesser intensity. To some extent, climate change has been included in the field, but

[62] Esty 1999

some important lessons may be drawn from research focusing exclusively on environmental degradation. These concern the importance of state stability and the importance of whether a region has a history of high conflict intensity or of institutionalised cooperation in determining its proneness to violent conflict as a resolution of issues of environmental and resource stress.

A point of debate has been whether environmental degradation itself should be conceptually linked to security and conflict studies of whether they should be kept apart? In an early and oft-quoted article, Daniel Deudney has answered in the negative whereas others have answered in the affirmative. This report takes the stand that although no a priori link should be assumed all societies are grounded in their territory and this 'groundedness' entails a dependence on natural resources. However, this dependence varies greatly between societies, as do their means of dealing with issues of scarcity and dependence internal to the territory and in relation to their neighbours. Environmental security debates matter to the geopolitics of climate change since in some cases climate change may lead to a degradation of eco-systems and human habitats. Furthermore, some effects of a warmer climate and changed precipitation patters, such as droughts, floods, torrential rains and storms may seriously threaten agriculture in some parts of the world. Threats to agriculture, horticulture, livestock and fisheries may weaken the resource base of local communities or even entire societies. These processes and their relation to violent conflict have been studied within the field of environmental security which is why the findings of the principal research projects are of relevance to this report.

According to Homer-Dixon, the leading authority on the linkage between environmental degradation and violent conflict, disputes concerning environmental degradation are more likely to lead to '…ethnic clashes caused by migration and social cleavages caused by environmental scarcity…[and] civil strife caused by environmental scarcity affecting economic activity, livelihood, elite behaviour and state responses' than to inter-state wars.[63] The research conducted by the ENCOP team under Gunther Baechler support Homer-Dixon's argument. The ENCOP concludes that violent conflict when a combination of the following five situations occurs:

1. *Inevitable environmental conditions where a group is dependent on degraded resources for which there is no substitute.*
2. *Scarcity of regulatory mechanisms and poor state performance.*

[63] Dalby 2002:47

3. *Instrumentalizing the environment by a dominant group so that environmental discrimination becomes an ideological issue of group identification.*
4. *Alliance-building opportunities.*
5. *Spillovers from historic conflicts.*[64]

Clearly, as argued in the introduction section, both existing state and inter-state structures are of fundamental importance to whether changes in the natural environment are conducive to violent conflict. This insight also guides the analytical perspective as well as the policy recommendations of this report, which are summarised in Section 5.

Even though Homer-Dixon's research and the studies carried out by the ENCOP team seems to indicate that environmental degradation may not be likely to determine or directly lead to interstate wars or other large-scale conflicts, it may still be important in the future. For instance, it may play a large part in destabilising or even fragmenting states that are exposed, which in turn may lead to warlordism, the provision of safe havens to terrorists or organised criminal groups, facilitate WMD proliferation or, in the worst cases, lead to a new geostrategic landscape in certain regions.[65] Fears of destabilisation may apply not only to very resource-poor states but also to more developed states with a potential for unrest or instability such as Egypt or Nigeria.

The debate on whether the environment should be linked to security as traditionally understood has been the subject of controversy since the 1970s when the connection was first advocated by Lester Brown.[66] The current debate within International Relations began in 1990 when Daniel Deudney published his article 'The case against linking environmental degradation and national security'.[67] The opposing position has been taken by radical attempts to broaden the concept of (national) security to include everything related to human well-being. The principal proponent of this perspective is Norman Myers.[68] In a similar vein, although in less encompassing terms, Homer-Dixon & Levy have advocated linking environmental degradation and security in order to gain support for an environmentalist agenda.[69] The strategy of 'securitizing' the

[64] Dalby 2002:52-53
[65] The ENCOP project concludes that 'acute conflicts do not arise along the great fault line between North and South, but where climate change contributes to the collapse of local rural structures and regional political authorities'. Cited in Dalby 2002:53
[66] Brown 1970
[67] Deudney 1991
[68] Myers 1993
[69] Homer-Dixon & Levy 1995/96

environment in order to gain a greater acceptance of the urgency of environmental problems has been criticised by various authors, partly on the grounds that it frames environmental issues in a logic that is not its own and partly on scholarly grounds.[70]

Is there a substantial link between climate change and environmental degradation, other than the possible consequences mentioned above? Large-scale shifts in terrain may have important military and political consequences, on strategic as well as operational levels. The former, such as the opening of the Arctic to shipping, would have an impact on the political level. Effects of the latter kind would rather be transformation of permafrost to marshes and the disappearance of winter terrain in Arctic and Alpine areas. Their implications would perhaps not be so much policy-driving but rather have consequences for military practices, exercises, and equipment requirements.

2.4 A Region-Based Approach

This report uses the regions, or regional security complexes (RSC) outlined by Buzan & Wæver (2004) as the basic matrix for understanding the world and its regions. The theory they develop, regional security complex theory (RSCT), is useful for the purposes of the present report for four reasons:

1. It provides a tool to dissect a material that otherwise would be too large to handle.
2. RSCT constructs regions on the basis of the interactions of states within the field of security policy and since this is the interest of the report this perspective is a better angle than other ways of constructing regions, e.g. as whole continents or as climatic zones.
3. RSCT provides a framework for understanding how different regions and sub-regions are connected with each other as well as with the global level of politics. This is particularly relevant in order to begin to ascertain which consequences of climate change may be limited to certain regions, which ones will have inter-regional consequences and which ones will influence global politics.

[70] See Brock 1997, Lipschutz 1997 and Matthew 1997

4. The security interactions of most states take place with their neighbours, whether in the form of inter-state conflict or in the form of part of the causes of internal conflict.[71]

As the previous section demonstrated, a central concern of political geography and geopolitics is to emphasise that states are territorially located and that their location in relation to geographical factors and to social factors, i.e. other states, are of fundamental consequence for their politics. Because of this territorial embedding, the closest environment of states must be taken into account and hence RSCT, as its founders emphasise, is reminiscent of geopolitics and 'akin to a security version of much political geography'.[72] However, by stressing the paramount importance of the regional level to most states it differs from the geopolitical tradition which stresses the global level, something which is obviously highly relevant to US strategic consideration. In a global perspective the US is an anomaly since it is the only actor with a global outlook.

The emphasis on regional security patterns does not preclude analyses of politics on the global level, the original concern of the geopolitical tradition. The regional and global levels of analysis are combined firstly by assessing the eventual global effects of climate change and climate change consequences for each region, secondly by analysing global politics separately at the end of each sub-section, and thirdly by analysing some issues of global relevance in the section on themes touched by climate change (Section 4). The analysis of consequences for global politics in each sub-section naturally involves an emphasis on great power and superpower politics towards the region. The following paragraphs outline the basic structure and presuppositions of the theory and discuss its relationship to the subject matter at hand.

The basic unit of the theory is the Regional Security Complex (RCS). A security region is defined by its members having more security interactions and concerns with each other than with other actors.[73] The borders between regions are most often geographic, either in the form of natural obstacles to frequent interaction, such as seas, deserts or mountain chains, or in the form of states that do not belong to any region, but rather isolate them. Buzan & Wæver call the latter *insulators* or *buffers*. Although cultural factors are intertwined in some regions, they do not form the basis of these regions, but security interaction does.

[71] Brown (1996:575) argues that elite-level causes in neighbouring countries, i.e. the actions of the leaders of neighbouring countries play a much more prominent role in internal conflicts than is usually recognised. See also p.600
[72] Buzan & Waever 2004.69
[73] Buzan & Wæver 2000:41-43

Some RSC are divided into *sub-complexes* whose members, although connected to other actors within the same RSC, have more dealings with each other. A not yet fully developed RSC, in the sense that not all the countries that belong to it do not have well-developed relations with all other actors, is called a *proto-complex*. One example is the countries of the Horn of Africa (Djibouti, Eritrea, Ethiopia, Somalia and Sudan). The security concerns of these countries are connected to each other but every single member does not sustain diplomatic relations with every other member, which is a basic condition of an RSC.[74]

Not all complexes are characterised by the same kind of political relations and in order to accommodate that to the theory Buzan & Wæver propose a tripartite classification of *conflict formation*, *security regime* and *security community*.[75] The three terms denote a descending scale of enmity, mistrust and potential for violent conflict within the region. The factors that determine political relations between the states of a region are of course subject to change over time and one of the main purposes of this report is to ascertain whether and in what way climate change can contribute to or lay the ground for changes in political relations in different parts of the world.

Security regions also differ in respect to their internal structure. Basically a RSC can be either *standard* or *centred*.[76] A standard RSC contains two or more states and its members do not act on a global level. A centred RSC means that the region is centred on a single state, who dominate the region and the politics of which form an implicit or explicit point of reference for all other states. The state in question can either be a superpower, e.g. the United States in North America, or a great power on a global level, e.g. Russia in the CIS, or a regional power that does not play a global role, e.g. South Africa in the Southern African RSC. RSCs can change not only in respect to the conflict-intensity of political relations but also in respect to structure. These changes can either occur in respect to its internal structure or in terms of its external boundaries. In the latter case, the RSC can either contract or expand, which would change its membership and probably its political relations as well. Regions are not impermeable but their boundaries can be, and are, crossed by different kinds of security interactions. In this context it is sufficient to note that boundary-crossing can be made either by neighbouring states or by penetration by great powers operating on a global level.

Buzan & Wæver's construction of regions may be objectionable to some, either in the basic structure of the region or in the particular composition of a given

[74] Such patterns are what Scott 2003 calls "multilinear systems of communication"
[75] Buzan & Wæver 2000: 53-54
[76] Buzan & Wæver 2000:55

region. It is, however, not an issue of great importance for the present report since developing the theory is not one of its ends. The framework of RSC is used as a base and deviations from it will be dealt with pragmatically. As stated in the Introduction section, an important aim of this report is to try to ascertain what effects climate change (and its socio-political consequences) in a certain region may have for other regions or at a global level. Therefore the link between the regional and the global level must be dealt with.

Very few actors are active on the global level of politics and in terms of the framework used in this report they are either *superpowers* or *great powers*. The principal difference between the two types, apart from material capabilities, is that a superpower is engaged to varying degrees in all regions of the world and that it matters to the security calculations of actors in all regions of the world. Great powers, on the other hand, are not relevant in or to all other regions but certainly to some regions outside their own. Today there is only a single superpower, the United States; whereas today's great powers are France/ Germany/UK-EU, Russia, China and Japan.[77] In any region there will be one or more regional powers, actors who are important to that region but whose relevance, actions and capacities do not transcend its boundaries.[78] Examples are Brazil, Egypt, India, Nigeria, and South Africa in their respective regions.

The relevance of super- and great powers to this report and to any study on climate change are partly due to their greater weight in world politics in general and partly due to their importance to the international politics of mitigation and adaptation. Section 2.4. below outlines the connection between regional and global levels of analysis.

To conclude, the following regions are used in this report: The Middle Eastern RSC, subdivided into the Maghreb, Levant and Gulf subcomplexes; Sub-Saharan Africa, subdivided into the Southern African RSC, the Central African RSC and the West-African and Horn proto-complexes; the West European great power subcomplex (centred on the EU), the Balkan subcomplex is omitted in this report since it can be assumed to have been absorbed by the EU through the process of enlargement within the coming decade; the post-Soviet great power RSC is not dealt with separately but subsumed in the thematic section on the Arctic; the South American RSC, subdivided into the Andean North subcomplex and the Southern Cone subcomplex; and the Asian supercomplex, subdivided into the South Asian RSC, the East Asian RSC, subdivided into the Northeast Asian and Southeast Asian subcomplexes. North America is omitted from this report due to

[77] Buzan & Wæver 2000: 34-36
[78] Buzan & Wæver 2000: 37

the special characteristics of the region from a security point of view. It is militarily completely dominated by the United States and it is currently enjoying peaceful relations with its neighbours Canada and Mexico. In the short- and medium term it is very difficult to envisage how this could change, with or without climate change. This is not to say that security and stability in North America could not be affected by climate change in the long term, but that would have to be dealt with in a separate study.[79]

Two regions of great future importance are the Polar Regions, particularly the Arctic. It is not a regional security complex today and it will probably not take that form in the future due to the absence of significant landmass and therefore of independent states. However, due to its geostrategic importance and its natural resources which climate change might enable to be tapped, it will be included in the regional analyses.

2.5 Paths to Violent Conflict under Conditions of Climate Change

This section deals with two things: How states may react to debilitating pressures, which in this report is conceptualised as a loss of 'interaction capacity', and four typical ways that pressures induced by climate change may facilitate or even lead to large-scale conflict. In the first instance, climate change events act as permissive causes, whereas in the second, they act as proximate causes.

2.5.1 Loss of State Interaction Capacity due to Climate Change

International politics do not only change due to shifts in relations between states, either on a global or a regional level, but can also do so due to changes within states. In the present context, an important question is whether climate change will weaken states in different parts of the world to such a degree that they will not pursue that same kind of international politics as before, either due to unwillingness or due to incapacity. Therefore the concept of interaction capacity is helpful for the purposes of this study.[80] In this context it is used to denote the capacity of a state to act, not only towards other organisations but also towards natural systems. In this sense it is an indication of the strength or weakness of a state, a strong state has a high interaction capacity whereas a weak state has a

[79] Several studies have been made on the impact of climate change on North America. See for example Busby 2007

[80] See Buzan & Little 2000.

low capacity. By focusing on the state's capacity to carry out decisions taken by its legislature, the term replaces the dichotomy 'strong-weak' which tends to be rather unspecific.

- The state in question 'scales down' on international action (or its capacity for long-range power projection decreases) but it is still able to devote sufficient resources to controlling its territory. This possibility is most likely to occur in advanced societies with strongly developed ties between 'society' and the state.
- The resources of the state to conduct international actions and its capacity to act internally decrease. This does not necessarily mean less activity, but it can involve a situation where other organisations (political parties, militias etc.) take on tasks previously covered by the state and possibly begin to act across state borders as well. In most such cases, the new actors do not have the same interaction capacity and possibility to mobilise resources as the state previously had.
- The state 'scales down' on domestic activities and on international engagements, most likely at first in all areas except security functions, but eventually these (e.g. law and order) may be affected in some areas. This means that the state apparatus separates itself from society but possibly retains the capacity to interact with other states, despite having serious difficulties in controlling its own territory or actually having no ambition to do so. This situation describes the situation in some African countries today and it is a possibility in other countries where the state apparatus and society are to a high degree decoupled from each other. Since climate change may in many cases, especially in the more severe scenarios, bring considerable stress on states and societies, the three possible outcomes of a weakened state interaction capacity are closely considered in all regions in this report.

2.5.2 The Climate is not a Conflict Protagonist but Protagonists may exploit the Climate

Conflicts can certainly arise in connection with climate change-induced events but, as stressed in the beginning and throughout this report, whether they actually do so is up to politicians and other actors. It is strongly recommended that we avoid the 'no-blame' view so common in analyses of internal conflicts, replete with vague assumptions of automatic processes and metaphors from other fields –such as 'spill-over', 'contagion', or 'diffusion' – when analysing the security

consequences of climate change.[81] A similar way of explaining conflicts that reduces political actors to instruments of structures is sometimes found in studies of 'ethnic' conflicts. As noted by Rachel Bronson: 'Ethnic and religious diversity does not in and of itself precipitate domestic conflict. In weak, undemocratic states, however, the likelihood of conflict increases'.[82] In both cases, a multitude of ethnic groups with a conflictual history or changes in natural climate systems can serve as facilitating conditions or, in retrospect, as permissive causes. In order to locate proximate causes, however, one must look at actors and in particular at the role of the state. Despite these caveats, a number of situations can be imagined under which climate change is used as a proximate cause to serve the interests of political actors:

1. Internal conflicts could arise when political actors seek to exploit questions of resource allocation (e.g. funds, territory, or food) or inter-group tensions in connection with adverse consequences of climate change. This could happen either with regard to groups that are already present in the country or with regard to migrants. In connection with climate change-induced migration the threat of conflict stems not as much from migrants per se as from politicians seeking to exploit the 'ethnic card' in order to buttress their own (faltering) legitimacy within constituencies. They might use the spectre or reality of climate-induced migration to instigate conflict at a sub-state or inter-state level. This type of politician could either be a head of state or government seeking to increase the legitimacy of his/her regime or an ascendant leader of an ethnic group. An analogous example of this kind of conflict was Slobodan Milosevic in Yugoslavia/Serbia, who created and fuelled inter-ethnic conflict to gain power during the 1980s. It should be stressed that sharp inequalities in a society, with regard to available resources and also to those most severely affected by crises and natural disasters, can be a strong permissive cause of this kind of political mobilisation. Some effects of climate change could sharpen socio-economic inequalities in countries that are already characterised by deep divisions.
2. A country stricken by the consequences of climate change could be imperilled by politicians in neighbouring countries seeking to exploit its weakness. Such exploitation could take many forms, 'intervention', subversion, through support to clients in the stricken state, or outright invasion –which may well be clothed in terms of 'intervention'. An analogous example of this type of conflict would be the wars in Zaire/Congo in 1998-2004, when neighbouring countries intervened out of a number of motives, not least economic considerations.

[81] See Brown 1996
[82] Bronson 1996:212

3. A second interstate type of conflict could be conflict over resources or land. If a country's resources have been depleted or are in danger of becoming so or if important parts of its territory become unviable it could then seek to compensate itself by attempting to seize territory from its neighbours. This scenario is reminiscent of certain conflicts in Europe until the end of 1945. The typical example would be the resource-driven wars of 1931-45. However, it must be stressed that the road to conditions resembling those prior to 1945 would be quite complex, in any case in the West and the rest of the developed/industrial world. The preconditions for such a development to occur are as follows:
   Climate change is a gradual process that takes place over a relatively long period of time and human societies can, adjust up to a point. For the hypothesis of resource-wars to be valid it would necessitate political leaders being able to make complex cost-benefit calculations over a relatively long time in order to determine their breaking-points beyond which their countries would require new territory. If a state were to launch a war for resources or for new Lebensraum, then it would have to time this aggression before its interaction capacity became too diminished. For such a course of action to be plausible, a great deal of foresight and planning would have to be necessary. However, in this respect perceptions will matter greatly.[83] The belief of a country's leadership that the survival of the state or of the nation is threatened by the degradation of its territory and that it can do something about it by invading one or several neighbours could be more important than any rational calculus. For such beliefs to determine state policies, however, a number of conditions have to be in place. First, it requires a paradigm under which the state apparatus is responsible for the national economy and is obliged and ready to go to considerable lengths in order support it. In the West and elsewhere in the developed/industrial world the dominant trends about the relationship between state, society and the economy would have to change considerably given the prevailing thinking on the desirability of scaling back the role of the state in managing the economy.[84]
   A second precondition would be that national and international market mechanisms for procuring resources and foodstuffs would have broken down or begun to break down in a serious way. Such a development could entail a reversal to a situation in which countries are more autarchic and the state, not the market, has the primary responsibility for managing the economy. These two conditions were in place during the economic depression of the later 1920s and 1930s. World War II and its preliminaries (e.g. Japan's war in China from 1931) were characterised by struggle over industrial raw

[83] Concerning the 'security dilemma' see Jervis 1976
[84] The literature on the current re-configuration of the state-economy nexus away from the tight coupling of 'high modernity' is vast. Examples that can serve to summarise the main arguments are: Cerny 1995, Bauman, 2000 and Elliott 2007

materials and land. However, the aggressions by Nazi Germany, Imperial Japan and Soviet Russia cannot be explained only by their perceived need to secure raw materials and territory. Their respective ideologies of racial or ideological superiority were motivations in themselves but these ideologies, together with the character of the international system at the time, played a major role in shaping perceptions about scarcity that only warfare could address. Overall, a number of factors would have to change in order for resource wars to become a major feature of international life. An important factor that could, on its own, contribute decisively to such a development would be a massive change in the global economic system. In this respect the warnings of the Stern Review are particularly worrisome. It argues that the economic costs of not mitigating climate change '…could create risks of major disruption to economic and social activity, on a scale similar to those associated with the great wars and the economic depression of the first half of the 20th century'.[85] Such a development with wide-spread failure of national and international market economies might constitute important permissive cause for a resurgence of 'military mercantilism'

4. Subsistence conflicts.[86] In particular contexts, such as when groups are very close to the means of their subsistence (e.g. farming, pastoralism) and possess the means of violence, or even informal or formal authority to use violence, groups may come into conflict over scarce resources of arable or grazing land. Such conflicts could occur in situations where an equilibrium between groups is disrupted by e.g. drought, or the balance between groups is changed due to the introduction of new groups in the territory by movements of migrants. The importance of particular permissive causes in such conflicts should be underlined. One important permissive cause could be that the antagonistic groups are subsistence economies, with very limited margins and capacities for absorption and adaptation to change. Another is the lack of arbitration mechanisms and absence of state institutions to facilitate adaptation, mediation or even to pacify the antagonists in the conflict. An example of a conflict where these elements are present is the current (2007) situation in Darfur, Sudan.

Thus, when discussing conflicts in the context of climate change, the most important proximate causes of conflicts may be the presence of politicians who want to exploit the situation or the absence of politicians who make conscious choices to avoid conflict by addressing socio-economic hardships resulting from climate change. Climate change effects can influence the permissive causes that enable such developments. However, it needs to be underlined that these connections, except in the type referred to here as 'subsistence conflicts,' are

[85] Stern Review 2007:vi
[86] For a full expatiation see Homer-Dixon 1991:73-75

mediated by other sets of permissive causes, e.g. the economic system and/or conscious political actions.

2.5.3 Non-Climate Factors in the Analyses

'Climate' or the climate system cannot be isolated in order to ascertain whether this particular variable causes particular outcomes. Changes in the earth's climate system entail a range of changes in other natural systems, so therefore a number of other factors enter into the analysis. These projected future changes are included in many cases in the IPCC 2007 scenarios. A (geo)political framework cannot be imposed directly on this level but must include other factors that either put a range of societies and states under stress, such as environmental degradation, or change them, such as urbanisation and demographic changes.

All indications point to increasing urbanisation of the world's population. By 2036, 60% of the world's population will be living in urban areas and in 2050 the figure will be even higher.[87] Urbanisation matters because it places stress on societies for a number of reasons:

1. Urban settlement in many parts of the Third World tend to result in a proliferation of shanty towns and unplanned settlements – in less technical jargon –, slums. This reduces governments' chances of control and places a number of people under economic, sanitary and ecological strain. Judging by the current proliferation of armed gangs in Brazil's *favelas*, impoverishment may breed alienation from the state and in some cases foster unrest or even insurgency.
2. Urbanisation in the above sense challenges the resources of the national economy, leading to the possible weakening of many states.
3. Urbanisation leads to increased environmental strain, with possibly adverse consequences for food security. The world's increasing urbanization also has military implications since the battlefields of 2050 may to an even larger extent comprise dense urban areas.[88]

Demographic change in simple terms means an ageing population in Europe, North America and Japan and populations of increasing youth in developing countries.[89] Demography matters for two reasons, internal stability and relations of power between states. It should be noted that demographic changes in the sense of growing or decreasing populations may have implications for relations

[87] DCDC 2007:9
[88] As pointed out in a previous report from FOI Bogland, Frelin, Henningsson & Lilja 2006:37
[89] DCDC 2007:6-9

between states as they can be perceived as signs of increases or decreases in state power.

Many other factors which will be very important in determining the shape of the world over the coming fifty years are not dealt with in detail in the analyses below because their complexity would stand in the way of the principal ambition of the report; to provide a clear and concise framework for understanding the plausibility span of climate change and conflicts. Examples of such factors are economic development, global as well as regional, and the future status of China and India.

3 Regional Analyses

3.1 Introduction

This section deals with geopolitical changes in the security regions dealt with in the previous section that may occur as a result of climate change. One aim is to ascertain differences in conflicts, tensions and problems under different climate change scenarios. In some cases one is forced to conclude that the same kind of problems may occur under different scenarios but, most probably, to different degrees. Such points certainly call for further research.

Before moving on, two caveats are in order. Firstly, some aspects of climate change will inevitably cut across political regions. One example is the issue of the river Nile, which affects countries in the Levant subcomplex as well as the Horn protocomplex. Following the preconditions set out by RSCT, the political effects are dealt with separately in each region. However, the description of the natural phenomena that affect many regions, e.g. the drying up of the Nile, cannot be presented in detail for each region, for reasons of scope and readability. Therefore, a phenomenon of this kind is extensively dealt with the first time it is encountered in the text and, on subsequent mentions, cross-reference is made back to the initial description.

Secondly, in a report of this scope all countries in a region cannot be dealt with to the same extent but some selection must be made. Here this selection was based on the importance of a country to regional dynamics (economic, political and security) and to global politics. An example of the former kind of selection is the greater importance of Egypt and Israel compared with Jordan and Lebanon. An example of the latter is the greater importance of the Maghreb to the Southern flank of the EU than any of the South American regions.

3.2 The Security Regions of the World and Climate Change

3.2.1 Sub-Saharan Africa

Introduction

This sub-section deals with the effects of climate change on the security interactions in sub-Saharan Africa and is organised in the following way. First, some preconditions of the argument are introduced which pertain to the general

conditions of security politics in these parts of the world. These are the particular nature of the state in many parts of Africa and the nature of international politics in the regions of the continent. Thereafter some general arguments are presented, from which two different hypotheses of how security interactions can be affected by climate change are later derived. The first postulates that climate change may strengthen tendencies towards dissolution of states and societies, whereas the second postulates that the state layer could actually be strengthened under conditions of climate change. The two hypotheses are not mutually exclusive but they can apply to different countries or possibly, a scenario could be imagined where both occur, but in sequence. After this introductory part, analyses of the regions (the Southern African RSC, the Central African RSC, the West African proto-complex and the Horn proto-complex) are presented.[90] There follows an analysis of the global consequences of these possible developments in the regions of Africa and an analysis of possible conflicts arising from mitigation and adaptation measures.

Preliminaries

Certain reports have connected climate change in sub-Saharan Africa (hereafter Africa) with an accelerated condition of insecurity and conflict.[91] The combination of high exposure to the natural events of climate change, low resources for adaptation, fragmented societies and conflict-ridden histories that we can foresee for many parts of Africa seem to make these assumptions probable. In the wider debate such prognoses for Africa have been very influential since (and due to) Robert Kaplan's evocative article (1994) and book (2000) 'The Coming Anarchy'. A systematic inquiry into this connection must, however, carefully investigate a number of questions, not least of which is the contemporary situation in Africa's regions. The preliminary factors we need to discuss are

1. The state in Africa
2. International relations in the regions of Africa and
3. The international environment.

The biggest intellectual puzzle in this regard concerns the position of the state in security affairs in Africa. Two moot questions are whether conflict will intensify

[90] For another division of Africa into regions, although not explicitly along the lines of security interaction see Chazan, Lewis, Mortimer, Rothchild, & Stedman 1999:362-63

[91] CNA 2007:22 and Beckett 2007 an example of this train of thought in the media, see TIME magazine's attribution of the conflict in Darfur to climate change. TIME magazine Tuesday, Jul.31, 2007 http://www.time.com access 20070801

and whether this will take place between or within states. Any arguments about the future of the security situation in the various African regions, with or without inclusion of climate change in the equation must, however, proceed from an adequate understanding of the African state, international relations in Africa and of the various cross-border inactions with bearing on security concerns.

Firstly turning to the issue of the state in Africa: States in Africa are not only weak, they are also in many cases of a different kind than in the North. Not only do states sometimes lack the means to address problems of their populations, but they also lack interest in doing so.[92] Due to the highly personalised nature of statehood in Africa it sometimes makes more sense to talk about regimes rather than states.[93] Although the states are externally recognised by the United Nations, by the African Union (AU) as well as in the international system; internally they function very differently from states in the North. The state apparatus is in many cases decoupled to a very large degree from other organisations within the territory, which we would usually call 'civil society'.

Instead it is a coercive-intensive apparatus of resource extraction and exploitation for the benefit of certain groups within the territory: clans, tribes or other networks.[94] However, because of the short history of the post-colonial state in Africa it is misleading to talk about 'state capture'.[95] Although the term conveys very similar phenomena, namely the control and use of the state apparatus by groups or networks that do not relate to the rest of society in a polity-like way, unlike in e.g. Central Asia, Russia or Ukraine, in many parts of Africa, there was never a neutral state that could be captured. Instead, patrimonial relations became embedded within the state structures from their very inception during decolonialisation. However, the state in many African countries became a prize for zero-sum competition between different groups and networks because it offered an ideal vehicle for exploitation and particularistic enrichment.[96] Since the end of the Cold War, this predatory, post-political pattern of actions by armed groups, initiated by state regimes has also spread to sub-state actors.[97] Understanding this regime- and predatory nature of the state in Africa enables us to discern the conflict dynamics in a clearer fashion.

[92] Buzan & Wæver 2004:226
[93] Buzan & Wæver 2004:
[94] This is a widely shared view among scholars of contemporary Africa, for an overview see Howe 2001:10-11 For the term "coercion-intensive" see Tilly 1992
[95] See for example Kaufmann, Jones, and Hellman 2000
[96] Howe 2001:35-40, 43-44; Stedman 1996:242-43
[97] Howe 2001:88-92 and Kaldor 2006

The conceptual pair 'integrated' versus 'differentiated' can in some aspects replace the dichotomy between 'strong' and 'weak' states. For instance, the state regime of a particular country may be strong, its scope of action limited and substantially decoupled from most (but not all) groups existing in the country's territory. Such a state regime is usually coupled to some groups in a network of patron-client relationships.

Therefore, we now turn to the second point, international relations in Africa: An understanding of the particular character of the state is necessary if one wants to understand the particular dynamics of African international relations. Although the state in certain respect is quite weak in many parts of Africa, organisations on the regional level have been strong. At an early stage of decolonialisation, the OAU pre-empted inter-state warfare by 'institutionalising the rule that there would be no forceful changing of the postcolonial boundaries.[98]

The weakness of the states in Africa, but also a compact between the ruling regimes of the African states to respect each other's external sovereignty has served to keep violence restricted to a sub-state level, in the form of internal coercion, insurgencies/insurrections, but also subversion and guerrilla activities.[99] Due to the prevailing structure of African states and societies, the ruling elite have hitherto had little to gain from embroiling themselves in external conflicts, not least because it would risk weakening them in relation to domestic contenders. Any increase in the level of inter-state conflict or other kinds of security interaction would probably have to be preceded by changes in the character of the African states and thereby of the international system in Africa.

There are, as always, exceptions to the general trend that conflicts do not occur on an inter-state level. An important example is what has been called Africa's first 'world war', the wars that ravaged Zaire/Congo between 1998 and 2003, during which between 3.1 and 4.7 million people were killed and implicated the forces of Congo (Kinshasa), Angola, Namibia, Chad, Zimbabwe, Uganda, and Rwanda along with various rebel fractions.[100] Conflicts, sometimes by proxy between Angola and Zaire/Congo occurred with some frequency in the 1970s.[101]

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[98] Buzan & Wæver 2004:222 Cf. Article 3 b) of the OAU Charter 'The Union shall function in accordance with the following principles: … defend the sovereignty, territorial integrity and independence of its Member States;' from OAU 2007 See also Chazan et al 1999:362 & 384 Stedman's (1999:240) caution that although the OAU's emphasis on preservation of colonial borders has contributed to the relatively low degree of inter-state wars, it was a recipe for internal instability in many parts of Africa.

[99] Howe 2001:47

[100] Black 2005

[101] Chazan et.al. 1999:389-90 See Stedman 1996:246 for the basic dynamics of Angola and Zaire's mutual conflict by proxy.

Another is the recurrent inter-state wars taking place between Ethiopia and Somalia (1978-79) and between Ethiopia and Eritrea (1998-2000) on the Horn of Africa. It should also be noted that outside intervention in domestic unrest and conflicts is fairly common.[102]

The third point relates to the nature of external penetration of the region. An external mechanism concerns outside penetration and the funding of state regimes by the selling of natural resources (diamonds, oil, wood, minerals). This can proceed uninterrupted by climate change and is rather determined by the demand for such resources on global markets. There is no direct reason why these processes would have implications for security politics or security interactions since under the current economic paradigm of free trade they are the subject of international trade policies rather than, as in the nineteenth century colonial paradigm, security politics.

Buzan & Wæver state that 'security interaction in Africa is generated more by weakness than by strength, as when imploding states inflict spill-over on their neighbours.'[103] This explanation explains the security dynamic of African regions firstly by reference to the lack of an effective monopoly of violence in certain countries which accounts for the non-pacified nature of their territories. Secondly, it denotes the weak capacities of many African countries to uphold their external sovereignty, while thirdly it related to the artificiality of many state borders.

However, the great differences between African states and societies must be taken into account before any serious attempt to gauge the security impacts of climate change can be made.[104] There are great differences between the relatively strong and integrated states of South Africa, Namibia, Tanzania and Botswana on the one hand and the weak and loosely coupled states of Chad, Sierra Leone and DR Congo on the other. Another category can be formed of the states whose regimes possess large armed forces but nevertheless are not as integrated or do not have the same breadth of internal capabilities as South Africa. In this category we could place Nigeria, Uganda, Zimbabwe and Angola.

The first general argument of this section is that transformation of security structures in Africa is unlikely due to climate change alone. The following are important conditions that have to be altered in order for the security dynamic in the regions of Africa to be fundamentally changed.

1. Changes in state-society relations.

[102] Buzan & Wæver 2004:229
[103] Buzan & Wæver 2004:229
[104] A point also made by Howe 2001:3 See also Stedman:1996:236-37

2. Changes in the structure of African international relations.
3. Changes in the wider international environment. More likely than changes in these three factors is continuation and reinforcement of existing dynamics. Nevertheless, these are sufficiently complex to enable a wide variety of developments. Two major pathways are described below on the basis of an application of the argument that climate change affects the interaction capacity of states and societies.

The second general argument of this section is that climate change will weaken the interaction capacity of many organisations, state regimes as well as sub-state actors and groups. The question that divides the two hypotheses below is where this degradation will fall, state or sub-state level.[105] The regional consequences of the two different developments also differ.

The first hypothesis is that climate change will strengthen tendencies towards dissolution of states and societies. The argument that droughts, famines, floods etc. may lead to conflicts is based on the assumption (or condition) that those who are stricken have the ability to mobilise and exercise collective action by either directly possessing the means of violence or by putting pressure on agents to exercise violence. Therefore these fears are highly relevant in areas where the capacity for violence is spread across several groups who are based on local communities (which are those that will be the worst affected).

One could further imagine scenarios where the state regime condones or encourages conflicts between groups within the country or extending across international borders in order to avoid that grievances being addressed to the regime. Groups may address their grievances either in the form of violence directed at the regime or through political pressure in order to make it act on the behalf of the affected groups. This argument builds on the possibility that the state level may transfer or tolerate a certain amount of 'self-help' to sub-state groups that possess the means of violence.[106] It may even supply sub-state groups with such means and latter-day 'letters of mark' to fend for themselves much like the privateers of the early modern era in Europe.

The strength of sub-state loyalties in many parts of Africa is certainly a factor that plays in to the proliferation of conflict in general and under future conditions

[105] See Howe 2001:73-128 for an excellent survey of the diversification of security actors in many African countries, often decoupled from the state level (either in the forms of sub-state militias or the ruling regime's own security apparatus) or even from the state regime itself. The term "peripheralization of security" (Howe 2001:84) captures the drift away from the state, sometimes by independent regime forces, sometimes by sub-state actors prevalent in many African countries.

[106] For evidence of such practices vis-à-vis the army in Nigeria and Uganda see Howe 2001:43-44

of climate change in particular. If the lands of a particular tribe or kinship group are afflicted by the adverse conditions of climate change, how will members of that tribe who are enrolled in the security forces react? Where will their loyalties lie? The problems of sub-state groups with armed capacities pursuing either political or purely economic ends, the latter in a highly predatory fashion, are compounded by the prevalence of small arms in many African countries.[107]

However, a second hypothesis may be formulated based on the general arguments of this section: Climate change will not change the basic security situation in Africa as defined in this report. The basic internal mechanisms as well as those that connect politics in the regions of the continent with global dynamics will be able to continue working. These are the decoupling of the state regime from the parts of society left outside power. If anything, climate change might actually strengthen the state layer by stripping other organisations of power and resources (like in Zimbabwe today). The afflictions that local communities and groups may suffer as an effect of the consequences of climate change (e.g. lessened food security, loss of homes and habitat) could also play into local security dynamics by being exploited by state regimes against groups within the country. A possible scenario is of foreign aid and adaptation aid being withheld from groups that are perceived as potential threats to the regime. Similar strategies have been used in the past but with worsened conditions for agriculture or habitability due to other kinds of ecosystem degradation (e.g. salination of drinking water) in some regions, the effects could be even worse, making such strategies more effective in fragmented countries.

Strengthening the state regime may in some cases have grievous effects on human security since a state monopoly of violence does not necessarily entail pacification and rule of law but unopposed coercion. To this threat to human security must of course be added the stress that climate change itself imposes through worsening adverse conditions and extreme weather events. Thus although the Human Development Indexes (HDI) may plummet further, the security effects may not be as adverse as some reports state.

This hypothesis therefore depicts a slow decline rather than sudden collapse or implosion that would lead to new conflicts or even patterns of conflict. This idea is based on a rejection of the 'tipping point' arguments that are often made in popular media or by ecologists. Furthermore, as Michael E. Brown points out, '…the idea that internal conflicts are driven more by mass-level forces than by elite-level forces seems to be off-target'.[108] Although mass-level forces are not

[107] Stedman 1996:247-48
[108] Brown 1996:572 & 582

unimportant, their role in triggering internal conflicts is far less important than that of elite-level forces. Firstly, human societies are adaptive and adjust rather than collapse, albeit to even lower HDI levels. Secondly, societies in many of the less integrated countries in Africa have subsistence-based economies and due to the low level of complexity and of activities connected to public spending, these societies would not change much due to a weakening of the capacities of the state layer. The above hypotheses apply primarily to the weaker states in Africa. Climate change may also have effects on the stronger states such as South Africa, Nigeria and Namibia. In turn, how they are affected will have other consequences for the security dynamics of the regions of Africa.

A possibility that will be explored for the respective regions is that the collapse of a major resource-rich country would entail a situation like the war in DR Congo 1998-2003. It involved a changing state regime –and hence a war of transition– in a resource-rich country that was connected economy-wise as well as security-wise (UNITA-Angola) to a number of neighbouring countries. Having outlined these possibilities, we now move on to a survey of the respective regions of Africa.

Sub-regional trends and patterns

According to the IPCC Southern Africa is set to experience increases in temperatures ranging from 2.5ºC in coastal areas up to 3ºC in the winter months (DJF) and between 3 and 4ºC inland during in the summer months (JJA).[109] The western and inland parts of the region are set to be most significantly affected. The zone with an estimated increase of 4ºC during the summer extends from Botswana, Zambia and into Namibia and southern Angola. Precipitation levels are set to decrease throughout the region during the summer months, again with variations between -10 to -15% around the coasts, through -20% in the inland of the Western Cape to a staggering -40% to -50% across the Kalahari, Namibia, western Zimbabwe and southern Zambia. During the winter months, however, there may even be slight increases in the Eastern Cape and KwaZulu-Natal regions of South Africa (<+5%) and more significant increases across northern Angola, Zambia and Mozambique

What happens to South Africa is a major question for the future security dynamics in the Southern African region. Zimbabwe, Angola and South Africa are the most militarily significant actors of the region.[110] It should also be noted that although Southern Africa will be severely affected by changed climate

[109] Christiansen et. al. 2007:869 June, July and August, obviously not being summer months in Southern Africa.
[110] Howe 2001:75

conditions in the form of rising temperatures and probably droughts, this region has developed relatively effective institutions of conflict management and resolution. The most important is the Southern African Development Cooperation (SADC) and a major task in order to stabilise this region is to encourage and support this organisation. It should be stressed that Southern Africa is one of the regions of the world that has had the best experiences of institutionalised conflict resolution. This applies to environmental and resource issues as well. As a result of signs of tensions over water resources in the Okavango River basin, shared by Angola, Botswana and Namibia, an international commission was established in 1994. It has so far successfully co-managed the river, hindered conflict and contributed to strengthening of institutional ties between the countries of the region.[111]

According to the models of the IPCC, West Africa, like all regions in Africa will, experience increases in temperatures, but with some exceptions these will be smaller than in North and Southern Africa. Along the densely-populated Gulf of Guinea, temperature will increase by around 2ºC summertime and up to 3ºC in the winter (DJF). There will be significant changes in levels of precipitation with the coastal areas from Guinea to Congo-Brazzaville receiving increases of up to 15% (particularly Nigeria) during the winter months.[112] Although social and political events are very hard to gauge from such abstract projections of natural systems, it is particularly noteworthy and possibly worrisome from a security point of view that Nigeria may experience strong variations between its northern and southern regions. Nigeria, the country that justifiably can be considered the region's hegemon, is today marred by political tensions with ethnic and religious undertones between its north and south. If climate change were to worsen tensions within Nigeria, this might have consequences for the entire West African region.

According to most models used by the IPCC, '[t]the increase in rainfall in East Africa, extending into the Horn of Africa, is also robust across the ensemble of models, with 18 of 21 models projecting an increase in the core of this region, east of the Great Lakes'.[113] As previously stated, one cannot link natural factors directly to social effects. However on the basis of climate change models of changes in temperature and precipitation, increases in the number and severity of drought, which may destabilise states and societies, do not seem probable for the Horn of Africa.

[111] Barnett 2000:277 See also the Okavango river basin commission's website http://www.irbm.co.bw/
[112] Christiansen et al. 2007:869
[113]Christiansen et al. 2007:869

Inter-Regional and Global Consequences

Throughout history, African states and societies have been objects, rather than subjects, of global politics. This situation is unlikely to change due to any of the factors surveyed above, except in one respect: the United Nations system. The stress that African states and societies will face due to climate change, demographic change, economic and resource stress may give them a stronger bargaining chip in international diplomacy and thereby affecting the nature of external penetration. It is also likely that African states may be enrolled by the respective sides in the international negotiations on climate.

Summary

In agreement with Swatuk, the conclusion of this report is that climate change is unlikely to change the basic structural conditions of African international politics.[114] Certainly, because the regions of the continent are among the worst affected by climate change, both in the form of drier and wetter climate, and the least able to adapt, the effects will be hardest felt in terms of human suffering. However, the impacts on security as it is understood in this report are unlikely to be large. One of the reasons for this argument is the rejection of the idea of a collapse of African societies that would result in a dramatic change in politics within and/or between states.[115]

Two additional factors must be discussed in addition to the two hypotheses outlined above. The first concerns the possibilities of substantial reductions in foreign aid and the second concerns the possibilities of democratic and economic progress. In the case of the first, it could be argued that the economic effect either of adapting to climate change or of dealing with the adverse effects of climate change, e.g. natural disasters, may weaken the possibilities and interest of developed countries in sustaining current levels of foreign aid. Not only that, but they may also become less inclined and possibly less able to supply economic means and technological know-how to support the necessary adaptation measures and institutional strengthening that African countries will need to tackle the challenges of climate change. This problem could be further

[114] 'The Southern Africa of 2050 in my view will not look much different from that of 2006, but in the absence of meaningful interventions such as those highlighted above, the region will be worse off, though given the almost universally low HDIs across Southern Africa, it seems to me the region and the vast majority of its peoples have not much further to fall'. Swatuk 2007:25

[115] In the gloomy words of Swatuk 'In my view, such disparities will not lead to social collapse either in the short term (2020) or the medium/long term (2050). African societies show a powerful resilience in the fact of negative change. And where there are comprehensive negative effects, people die –lacking a support base, or a vanguard of any kind, the poor simply do not make revolution; they die.' Swatuk 2007:6

exacerbated by the fact that many other regions, such as the Middle East, may be in dire need of assistance from the North. Tough policy choices may face the future leaders of the West and we are well advised to begin a thorough debate on options and programmes as soon as possible.

The second factor concerns the possibility of development of democratic structures and viable economies. As Howe rightly points out, democratization has important effects on the professionalisation of African military forces which in turn strengthens the impersonal and abstract state, not just the regime running it.[116] Strengthening democratic armies in turn shrinks the scope for other armed actors, for corruption, for predatory ventures and for deteriorating inter-, intra-, and cross-border security situations. Such developments in turn enhance the capacities for handling climate change and preventing natural causes from becoming security effects. Failing support and engagement from the North, such developments may not be forthcoming over the next fifty years. In connection with the argument pursued in the preceding paragraph, rising challenges to the finances but more importantly to the political attention of the West due to unresolved issues of adaptation/mitigation may spill over on the situation in many African countries. Hence, the corollary to the conclusion that climate change may not drastically change the appalling situation in many African countries is that climate change, if not managed with engagement, may prevent the situation from getting any better.

3.2.2 The Middle Eastern Regional Security Complex

Introduction

It is instructive to study the Middle East and its sub-regions, the Maghreb (North Africa), the Levant and the Gulf, in comparison with the African regions surveyed in the section above. There are certain structural similarities between Africa and the Middle East concerning the nature of the states as well as the character of inter-state relations that are disconcerting in the perspective of climate change-induced stress on these two regions. These factors also provide us with useful analytical starting-points.

Preliminaries – the State and International Relations in the Middle East

Many countries in the region are weakly integrated state-society complexes in which the state level is to a large extent decoupled from ‘society’. However, in

[116] Howe 2001:275-87

contrast to West and Central Africa, the state layer is however quite strong in many cases, with extensive capacities for maintenance of internal order, often by quite repressive means. However, few regimes have any kind of popular accountability and remain in the hands of elites or, in the cases of Syria and probably Libya, quasi-dynasties. Most states, if not all, harbour considerable fractures and opposition to the ruling regimes with large latent or actual domestic unrest. In cases like Egypt and Saudi Arabia, the opposition movements, such as the Muslim Brotherhood, are kept down by the repressive apparatus of the state. Thus, the order in many countries may be superficial in the sense that there is considerable potential for unrest or even destabilisation if the regime were to be seriously weakened.

Another worry is the large degree of dependence of many countries on one key asset, namely oil. The oil-fuelled economies of many states are also a motor of economic development in the region, for example by enabling large numbers of overseas guest workers in the countries of the Gulf. The funds that they are able to send home are in many cases important contributions to the economies of their home countries. The role of oil and gas exports in stimulating the regional economy is not only seen in the number of overseas guest workers but also in the fact that oil revenues buttress other sectors of the economy by providing capital. This dependency is disconcerting because oil, and to a lesser extent natural gas, will become scarcer in the future and thus a less reliable source of income.[117] Even if such a development lies in the relatively distant future and even if lower yields due faltering supplies may for a while be buttressed by rising prices, oil-dependent economies may be severely affected by mitigation efforts aimed at a transition away from fossil fuels. Hence, the key determining question as well as major bifurcation point for any kind of scenario designs concerning the Middle East – and given its tendencies to affect global politics – is: When and under what circumstances will oil production be affected climate change by mitigation efforts?

It is also worrying that other sources of national income, which may yet harbour untapped potential for economic growth, are likely to be negatively affected by climate change effects. Two of the most important are agriculture, both for subsistence and for the export market (e.g. vegetables and citrus fruits), and tourism. For sure, these factors are problematic, but what is the connection to conflict? Below the four pathways to violent conflict (internal conflicts, international conflicts, resource conflicts and scarcity conflicts) are discussed under conditions of climate change in relation to the Middle East:

[117] In a recent study Fredrik Robelius (2007) argues that world oil production will peak between 2008 and 2018 and thereafter decline.

The internal politics of many countries in the Middle East have an adversarial setting with limited channels of communication of dissent and grievances. These two factors increase the liklihood that climate change effects may be used by political actors to serve their own interests in domestic conflicts. Given the conflictual nature of domestic politics in several countries, political struggles over climate change effects naturally play into a tenser setting than in, for example, Europe.

Since many countries in the region are internally unstable there is a risk that increased pressures on health, habitat, economy, and food security might lead to unrest. These kinds of degradation will play into hostile dynamics between state regimes and more or less militant opposition movements. This risk could be interpreted in two ways: First, the possibility that regimes and opposition movements may consciously adopt and/or exploit the negative effects of climate change for their own political ends. Second, given the low degree of democratisation and political representation the channels of communication between state and society are very limited, which means that peaceful means of addressing grievances and issues of concern may be limited. Either way, the polities of the region could be seen as having structural traits that make destabilising effects of climate change a real possibility.

As regards international relations, the area has a relatively bellicose past and far from all security relations are directly connected to the Israeli-Palestinian question.[118] There is a cyclical tendency in the pattern of conflict and cooperation, which is linked to state stability and economic prosperity. Greater state strength in the 1970s and 1980s, largely but not exclusively thanks to rising oil revenues, lessened tensions over transnational issues, inhibited (or repressed) internal strife and discouraged state opportunism.[119] This characteristic stands in stark contrast with the 1950s and 1960s, which was a period marked by wars, uprisings and interventions both by external actors and by actors in the region (e.g. Nasser's Egypt). Natural resource revenues do not account for the strengthening of state structures that has taken place in many countries of the region, even those without oil resources, such as Morocco.[120] This relatively stable situation is currently being rocked by the competition over legitimacy

[118] Although the Israeli-Palestinian conflict is of very large political and symbolic importance, there are several other conflicts that are sustained by independent dynamics. This is evidenced by comparing the overall regional fatality figures in the Arab-Israeli conflicts between 1945 and 1995 (74,000 military and 18,000 civilian) with the figures from other Middle Eastern conflicts (345,000 military and 561,000 civilian). Buzan & Wæver 2003:215-16

[119] Bronson 1996: 218

[120] Bronson 1996:220

between regimes and various Islamist opposition movements.[121] Despite the relevance of the spectre of the Middle East returning to a more conflictual pattern (between states) if an economic downturn occurs, this model of thought may be problematic. The conflicts of the 1950s and 1960s were not only the result of worse economic conditions but were to a large extent wars associated with decolonisation and the formation of a state-system in a region that had previously been dominated by colonial and imperial systems.[122]

Above different pathways to violent conflict in conjunction with climate change were outlined. One of these was the possibility of a country's weakness due to the effects of climate change being exploited by its neighbours. The Middle East region contains some security issues of a transnational character, for instance insurgency movements that operate in several countries or use one country as a base for operations in another. One example is the Kurdish insurgency in Turkey which has operated from bases in Iraq and Syria. It also plays into the dynamic between Turkey and Syria over access to water since Syria is using the PKK to pressure Turkey on this point.[123] As long as all states in the Levant region are relatively strong or, as in the case of Iraq, protected by an external power, interventions by neighbours to settle scores with sub-state actors is not an option. However, should a state such as Syria be weakened by a series of events such as a collapsing economy, political disarray and deterioration of central control then a window of opportunity for intervention might open up. As Lebanon's troubled history during the civil war of 1975-90 shows, armed intervention into an already fractured and conflictual situation by an external party may well exacerbate conflict and instability.

The issue of water

The third category outlined as a pathway to conflicts under conditions of climate change was 'resource conflicts'. In the Middle East, water is often considered a scarce resource and several prognoses have been made that tensions over access to water might lead to conflict. Politicians and analysts[124] alike convey the picture that water is a resource with links to conflict that range from the plausible to the almost certain.[125] Furthermore, such links are expected to become stronger

[121] Bronson 1996:223-26
[122] Buzan & Wæver 2003:216-217
[123] Bronson 1996:227
[124] For the scholarly debate, Gleick 1995 is an important, albeit problematic text. See also Chou, Bezark and Wilson 1997
[125] For instance, the former UN secretary general Boutrous Ghali warned in 2005 that war between the riparian states of the Nile River is "almost inevitable" a statement which is cited in certain

under conditions of climate change and particularly so in already arid regions like the Middle East and Central Asia.[126] Despite its popularity, the argument that the scarcity of water resources is likely to lead to violent conflict (or has in fact already been a factor in conflicts) is beset with a number of problems. The argument linking water scarcity to violent conflict can be contested on a number of accounts, theoretical as well as empirical.

Regarding the theoretical underpinnings of this argument the following points must be taken into account.[127]

1. In contrast to short-term studies, long-range studies of water scarcity tend to find greater likelihood of co-operation and adaptation than conflict.[128]
2. As noted above, although decreasing resources may hit agriculture and negatively affect the quality of the human habitat, this in itself does not constitute sufficient grounds for violent conflict, particularly not international conflict. This is particularly true if a society were to be substantially shaken by shortages of a key resource such as water. Instead of prompting actors to go to war, it may actually weaken their capacity to do so, forcing them to focus on more immediate questions, such as maintaining law and order.
3. Arguments that scarce water resources may lead to conflict take insufficient account of the adaptive capacities of human societies.[129] Instead of resorting to violence or collapsing, societies may lapse into what evolutionary theory calls 'low-level equilibrium traps'.[130] Societies do not necessarily collapse but adjust and go on with activities but on a lower level than before.
4. Access to water is problematic in many parts of the world and the inequalities in its distribution have serious ethical and equity ramifications. It is important to note that the perception of inequalities and inequities may

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reports, for example Drexhage et al. 2007:20. Gleick 1995:91 also cites this statement by Boutrous Ghali

[126] cf. CNA 2007:30

[127] For a recent authoritative study on water and conflict see Philips, Daoudy, McCaffrey, Öjendal & Turton, 2006

[128] Matthew, Gaulin, & McDonald 2003:866

[129] This point is forcefully argued by Matthew, Gaulin, & McDonald 2003

[130] For an example of how this argument is applied in the social sciences see Spruyt 1994

increase tensions and provide ample material for actors seeking to foster conflicts. However, it must be noted that scarcity is relative to the technologies that can make use more efficient and in the case of industrialised countries to changes in lifestyles that could bring down consumption.

5. As argued above, the nature of the causal links between scarce resources, of whatever kind, must be closely thought through. Scarcity of water could, together with other factors act as a permissive cause of conflict, not as a proximate cause. The eruption of hostilities is decided by political actors and, as Michael Brown points out, the best insurance against hostilities is, good leaders and good neighbours.[131]

The empirical underpinnings of the argument that water scarcity may lead to conflict can be examined by looking at two cases from the Middle East, the Euphrates-Tigris basin and the Jordan valley. An obvious observation is that the water question is enmeshed with the complex dynamic of power games in the region, involving domestic, international and transnational issues. Questions of the overall leadership of the region may also play a part in the politics of water, for instance reflected in Saudi Arabia's support of Syria against Turkey in persuading the World Bank not to finance Turkish dam projects until a riparian treaty had been worked out with the states downstream.[132] The cycles of cooperation and conflict over water in Euphrates-Tigris basin have coincided with the changing relations of power between the countries of the area during the 1980s, 1990s, and 2000s.[133]

The use of scarce water resources in hindered by a number of sub-optimal solutions in the region. As Çarkoğlu & Eder note, in all riparian countries of the Eufrates-Tigris basin (Iraq, Syria and Turkey) there is a strong emphasis on food self-sufficiency 'regardless of its efficiency and its economic return'.[134] They name the political clout of the agricultural sector in all three countries and the lack of trust in the mutual relations of the states as features that sustain agricultural protectionism. Hence, although water availability is not as large as in Western Europe, the social and international effects of scarcity cannot be surmised only by looking at water levels.[135] Instead, the structure of domestic politics as well as of international relations in the area account for how this resource is used. An internationalised market for agricultural products could lead

[131] Brown 1996 op.cit.
[132] Çarkoğlu & Eder 2001:59
[133] Çarkoğlu & Eder 2001:59-67
[134] Çarkoğlu & Eder 2001:56, 59
[135] Çarkoğlu & Eder 2001:52

to greater efficiency in water use which would be an effective institution of adaptation to climate change.[136] The preconditions of such a measure would be a reduction of suspicions between the states in question and liberalisation of the agricultural market. In order to make such moves politically feasible and to forestall mass unemployment in the agricultural sector programmes of re-education and subsidies would have to be implemented.[137] The root of the problem which is perhaps most difficult to address is to change the current relations between the countries.

In order to gauge the role of water resources in conflicts, it is very instructive to compare the Euphrates-Tigris situation with the politics of water in the Jordan valley, primarily involving Israel, Jordan, Lebanon, the Palestinians and Syria. Plans for the distribution of water resources were first developed in the 1950s but, given the hostility of the parties (then including Egypt) they could not be implemented. The positions of the parties on water issues could only change in the 1990s once general peace agreements had been signed between the parties (in 1982 between Egypt and Israel). Once general relations improved, issues of water use could be given their institutional solution.[138]

The differences between the tenser relations in the Euphrates-Tigris basin and the more cooperative relations in the Jordan valley lends themselves to two kinds of explanations, the first focusing on the regional balance of power and the second on whether resource scarcity or abundance is more conducive to conflict. The first explanation would stress that the impossibility of the Arab countries challenging Israel militarily has increased the necessity for negotiations and has proven the futility of conflicts and brinkmanship, at least by state actors. In contrast, the more evenly matched Iraq, Turkey and Syria are able to engage in rivalry since none of them possesses clear dominance over the others. As stressed above, the relative strength of all parties in this configuration as well as that of their allies is a factor that contains the conflict to the political sphere. The second explanation would argue that the differences in the two cases lend support to the thesis that resource abundance rather than scarcity is more likely to lead to conflict.[139] It is also clear that a historical record of conflict cannot provide a

[136] Çarkoğlu & Eder 2001:65

[137] With the exception of Iraq, a substantial part of the populations in all three countries is employed in the agricultural sector. The figures are: Iraq 7% https://www.cia.gov/library/publications/the-world-factbook/geos/iz.html#Econ , Syria 26% https://www.cia.gov/library/publications/the-world-factbook/geos/sy.html#Econ, and Turkey 35% https://www.cia.gov/library/publications/the-world-factbook/geos/tu.html#Econ, (all accessed 2007-07-24)

[138] Haddadin 2000:280 & 282 For a somewhat different point see also Lowi 1995 [1993]

[139] Matthew, Gaulin, & McDonald 2003:856, 863

clear map of whether a region will experience conflict, armed or otherwise, in connection with access to water. Israel and Jordan have fought three wars since 1948 but now cooperate over water. In contrast, Syria, Iraq and Turkey have never fought in modern times but their security relations are far worse. Furthermore, the existence of migrants and other transnational issues does create a propensity for conflict, but this cannot be detached from the overall political context. In both cases, serious transnational issues exist between riparian states. In the first the Kurdish PKK guerrilla sours relations between Syria and Turkey and in the second the Palestinian question between Israel and Jordan. Only in the latter case, however, has this issue been consciously linked to the issue of water rights by a political actor (Syria), thus complicating the situation and worsening tensions.

Whatever approach provides the best explanation, it stands clear that one cannot understand the complex issue of water and conflict just by looking at levels of precipitation or availability. Being politics, the politics of water cannot be understood by recourse to 'water itself' but rather to the political context of a region. Hence simplistic prognoses of a causal link between the availability of water and conflict, political or military ought to be avoided.140 What we do see is that environmental issues can be used by political actors in tense domestic and international conflicts, a point that was underscored above in the section 'pathways to conflict'. Just as political actors may choose to 'play the ethnic card' in relation to climate change migrants, politicians may, hypothetically 'play the water card' in relation to both citizens and neighbours. Whether they will choose to do so and whether they will be successful in raising tensions by doing so depends a lot on the political climate, the structure of their polities and on their regional relations. Hence, water scarcity may lead to hardships for humans and animals alike, including worsened food security, but the links to large-scale armed conflict remain problematic.

Having pursued an argument of moderation in this section, we nevertheless want to insert a couple of caveats into it. Three factors may be identified that introduce an element of uncertainty into future developments: the speed of future changes, the demography and the economy. As noted in the section on political geography above, the climate changes that the IPCC foresees coming in fifty- to a hundred years from now will be much more rapid than previously experienced by human

[140] This point is also argued in detail, with particular reference to Southern Africa, by Turton, Moodley, & Meissner In this report, written for the Group for Environmental Monitoring (GEM), the authors state that: 'The water wars that the popular media would have us believe to be inevitable, will not be fought on the battlefield between opposing armies, but on the trading floors of the world grain markets between virtual water warriors in the form of commodity traders.' p.1 & 20

societies. An unknown factor is whether the pace of these changes will be so rapid that the adaptive capacities of affected societies will be overstretched.

The projected increases in population of the area may reduce the absorption capacity of the societies and ecosystems of the area. The unknown element of time also plays into the demographic factor since increases in population and speed of climate change effects may combine to outpace adaptive capabilities. Finally, the effects of climate change will coincide with falling oil supplies and revenues during the twenty-first century. This combination may challenge societies of the regions by catching them in a double-pincer movement of deprivation of resources and financial assets.

The risk of scarcity conflicts is a very difficult question to determine given the limitation in scope of this report, the complexity of the matters and the difficulties in predicting future developments. However, there are several factors that could make the propensity of this region for subsistence conflicts lower than in certain parts of Africa. The level of control by the state level is generally much stronger in the regions of the Middle East and has less willingness to allow a drift towards armed self-help dynamics by local communities. The greater levels of urbanisation also work against direct subsistence conflicts. Responses to decreases in food security might instead take the form of rising levels of crime or urban unrest.

Sub-regional variations

The Maghreb sub-complex[141]

The Maghreb subcomplex covers two climate regions, North Africa and the Sahel, which will be differently affected by climate change. This section begins by discussing the respective consequences predicted by the models used by the IPCC and then, when possible, discusses possible political and security consequences.

North Africa is set to be strongly affected by climate change with respect to temperatures as well as to precipitation levels. Across the region temperatures are set to increase with 2.5ºC during the winter months and 4ºC during the summer months (2.5-3ºC in coastal areas). Precipitation levels are set to decrease by between -20-30% during the winter and around -40% during the summer, with more severe effects in the Western part of the region.[142] Although these figures are estimates of 21 models for change in the period 2080-2090 relative to 1980 to

[141] Algeria, Libya, Morocco, Tunisia and Western Sahara
[142] Christiansen et al 2007:869

1999, the results they convey point in a definite direction even for the year in which this report is set, 2050.

Concerning the Sahel, the models referred to by the IPCC diverge, with some sets (GFDL/CM2.1) pointing towards a strong drying and another (MIROC3.2_midres) pointing towards a 'very strong trend towards increased rainfall in the region'.[143] Hence on average slight annual increases in precipitation seem probable, although with seasonal variations such as decrease in the winter and increases in the summer.

Two important external consequences for Maghreb are if (a) agriculture in the southern EU is hit hard and (b) if the EU closes its borders to immigrants with a firmer hand. The first of these would mean economic opportunities for the exports of agricultural products from the Maghreb, thereby strengthening the economy in these states. Given that southern Europe and the Maghreb will see similar effects of climate change in terms of rising mean temperatures and decrease in precipitation, this seems unlikely. However, agriculture in southern Europe could however be in a worse condition than that of Northern Africa due to problems of water supply given that scarce water might be used in industries and households to a greater extent, but that remains speculative.

The second external effect, if the EU were to close its borders more effectively than today, would be extremely serious for societies in the Maghreb. Emigration provides an important outlet for people whose possibilities of supporting themselves in their native countries are poor. Given the burgeoning population of the Maghreb, cutting off this possibility could increase instability in these societies, particularly since the majority of migrants are young men.

*The Levant subcomplex*144

Of particular concern in this region, especially under conditions of serious climate change, is Egypt. Under the higher scenarios it may be subject to several simultaneous pressures. Sea level rises might threaten the millions that live in the low-lying Nile Delta, while at the same time, the inflow of water to the Nile decreases, leading to severe effects on agriculture. In combination with the general rise in temperature, especially during the summer months this may increase stress on the population and seriously damage the country's tourist industry which in 2002 brought US$3,764 million to Egypt[145].

[143] Christiansen et al. 2007:869
[144] Egypt, Syria, Jordan, Israel, Lebanon
[145] http://www.world-tourism.org/facts/eng/pdf/barometer/june2004.pdf access 20070726

A key issue in this subcomplex, as well as in the Horn proto-complex and the Central African RSC is what happens to the river Nile. The White Nile flows through Uganda, Tanzania, Sudan and Egypt, whereas the easterly Blue Nile flows through Ethiopia, Eritrea, Sudan and Egypt. Today, a total of 360 million people live in its basin, including almost all of Egypt's 78 million.[146] By 2050, Egypt's population is projected to have increased to 125 million.[147] The corresponding figures for Sudan are from 41 million in 2006 to 84 in 2050.[148]

Evaporation and possible decrease in precipitation are two important reasons to fear the Nile drying out. However, precipitation levels are predicted to increase in Central and East Africa which may to a certain extent offset some effects of increased evaporation. Nevertheless, it is conceivable that these benefits would only affect Southern Sudan and not Northern Sudan and Egypt further downstream. The reason would be that evaporation is likely to have more effect on flows the further north one goes.[149]

A drying of the Nile, with concomitant water stress in Egypt, would have serious effects on several areas.[150] Although the connection to armed conflict remains tenuous, it could damage the Egyptian economy and worsen human habitats. Whether such a development would destabilise Egypt or not is difficult to predict. However, given the importance of the country to the Levant sub-region the very possibility is a cause for concern. Given the economic interdependence of the region and the importance of sustained water security in Egypt in a way that does not infringe upon the countries further upstream, joint cooperative institutions like the Nile Basin Initiative are very important since they mean that riparian states meet future challenges jointly.[151]

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[146] Wong, Williams, Pittock, Collier and Schelle2007:28

[147] http://www.prb.org/DataFind/prjprbdata/wcprbdata7.asp?DW=DR&SL=&SA=1 access 2007-07-25 Do note however that the United Nations projections range from 101 million (low variant projections) through 121 (medium) to 143 million (high) in 2050. If constant levels are maintained, the UN projects a population of 163 million. http://unstats.un.org/unsd/cdb/cdb_years_on_top.asp?srID=13660&Ct1ID=&crID=818&yrID=2050 access 2007-07-25

[148] http://www.prb.org/DataFind/prjprbdata/wcprbdata7.asp?DW=DR&SL=&SA=1 access 2007-07-25

[149] Cmp. Wong, Williams, Pittock, Collier & Schelle. 2007:28-30

[150] c.f. Esty 1999:298-299

[151] See the Nile Basin Initiative's website http://www.nilebasin.org/ access 2007-07-25 For further cooperative measures in water issues see Carius 2007. For the role of the European Union (The EU Water Initiative, EUWI) in international cooperation in water questions, particularly in Africa (such as the Nile River Basin Initiative) see Carius, Tänzler, and Feil 2007:47-50

Consequences of Mitigation – Adaptation Measures

A paramount issue of concern for the Middle East region in general and for the Gulf subcomplex in particular in the interrelated field of climate change and energy politics is what will happen to the global consumption of fossil fuels.[152] In this report, the question of whether consumption and thereby sales will be reduced or not is considered not to be as significant as the question of when and under what circumstances (international as well as domestic) this will occur. The Middle East and the Gulf region in particular need to adapt not only to a world of climate change but also to a world of significantly lower amounts of consumption of fossil fuels. Some policies of moving away from the exports of oil are visible in the United Arab Emirates, most significantly in Dubai which is diversifying into the service-sector, primarily high-values services such as finance.

Over the next fifty years, the Middle East could be facing a highly problematic double pincer movement of increasing strain on societies and economies due to climate change as well as to demography on the one hand and increasing shortage of funds on the other, either due to the waning of oil supplies in the region (a disputed point) or because of a reduction in demand due to climate change mitigation efforts. If serious global –or even Western– policies of mitigation are pursued, then the need to reform the oil-dependent economies of the Middle East towards diversification may come sooner but reforms may also be conducted in a planned manner. The alternative might be that oil-exporting countries go on relying on a finite resource and wishful thinking and hence postpone reforms of their economies to a point where they may lack the adequate funds and state stability to carry them through.

The long-term nature of both scenarios involving decreasing levels of state revenues from oil with knock-on effects for stability make it harder to envision preventive action. Nevertheless, the grave security implications of Middle Eastern state structures and economies imploding – possibly in combination with effects of climate change – ought to persuade Western governments, European in particular, to contemplate long-term policies of engagement and support. A conclusion that can be drawn from this section is that the economy is a key factor, as well as a key uncertainty in relation to the future security situation. The problematic connection between economy, state stability and conflict propensity will be further discussed below.

[152] This issue is dealt with in Chatham House 2005, See in particular 1-5 & 44-45

3.2.3 The Asian Supercomplex

We now turn to the regions of Asia (East Asia, Northeast Asia, Southeast Asia and South Asia) with the purpose of ascertaining the propensity for conflict in connection with climate change. Because of the vastness of this area and the variety of climates, terrain types and political systems, this report restricts the focus on three areas: South-east Asia in general[153], India and Pakistan and China.

China and Climate Change

This section discusses climate change in relation to China with particular focus on the question of whether, and if then how, it will affect China's stability. It deals with possible pathways to the destabilisation of China, but stops short of outlining scenarios of an actual collapse or dissolution. This choice is based less on an estimate of probabilities than on the necessities of limiting this section. Some possible international and regional effects of destabilisation and/or the establishment of a much more hard-line government are discussed. In relation to China the first important question to answer is if and how climate change will affect its current and future growth rates and economic development. The second is to try to ascertain the effects this will have on the region and on the world.

It is difficult to discuss climate change in China without taking into account the massive environmental degradation already taking place.[154] It has been estimated that environmental degradation places a large strain on China's economy, amounting to losses of at least 10% of its gross domestic product (GDP) and perhaps as much as 15%.[155] Apart from industrial pollution, water stress and the scarcity and poor quality of arable land are the most serious problems facing the country. Water stress and agricultural output and productivity in particular are expected to be adversely affected by climate change. In the northern provinces, water scarcity is estimated to increase whereas precipitation increases in the south are estimated to increase instances of flooding. Productivity on irrigated land is expected to decrease by between 1.5% and 7% and on rain fed land by between 1.1% and 12.6%. The seven provinces in the north and northeast that account for 14% of the total value of agricultural production are the most vulnerable areas.[156] Already, China's grain production has already been substantially impaired by environmental degradation, something that worries agricultural planners.[157] Furthermore, the IPCC argues with 'high confidence'

[153] Burma, Indonesia, Cambodia, Laos, Malaysia, the Philippines Thailand and Vietnam
[154] For an overview see Smil 1996
[155] Smil 1996:2
[156] Stern Review Report 2007 p.77
[157] Rozelle, Veeck, and Huang 1997

that '[c]oastal areas, especially heavily-populated mega-delta regions in South, South-East and East Asia will be at greatest risk due to increased flooding from the sea, and in some mega-deltas, flooding from the rivers'.[158]

Since the beginning of China's transformation during the reign of Deng Xiaoping over two decades ago, popular protests and social unrest have multiplied in China. A number of issues have been identified as reasons for the protests, such as economic problems, labour issues, corruption, land ownership, environmental degradation and access to water.[159] The first three reasons are socio-economic whereas the last two are more directly environmental. Climate change is interesting in this respect since its effects may bring together and exacerbate two important causes of popular protests in China: Environmental degradation (through droughts, flooding, extreme weather events) and economic difficulties due to the costs of adaptation and damage to the economy.

In light of the projections of climate change there is a risk that China may encounter socio-political instability due to the combined effects of climate change and environmental degradation. This risk is connected to China's political system as much as to the scale of climate change and pollution. Because of the repressive political system social movements protesting against environmental degradation and the effects of climate change could be much more destabilising than they would be in a pluralistic country where the political system can deal with protest and interest articulation in a more accommodating way. Although China's leadership has displayed a greater flexibility and foresight than those of the former Soviet bloc countries, China still exhibit some of the general vulnerabilities of totalitarian states. The ruling apparatus has an inclination to treat protests as a challenge to the system and to the party's leadership. Because of this tendency to de-legitimise any kind of protest a totalitarian dictatorship increases its own vulnerability.[160] In this sense environmental degradation and climate change could become destabilising to China.

However, according to Kieslow, environmental protests are viewed differently by the Chinese central government than for instance democratisation movements or labour protests.[161] To a certain extent, they are seen as having a greater degree of legitimacy and the central government takes care to collaborate, or co-opt

[158] IPCC Working Group II 2007:8
[159] Keidel 2005:3
[160] Similarly Goldstone 1995:40 argues that it is not simple Malthusian arithmetic that threatens China's stability in relation to population growth but rather the Marxist-Leninist doctrine of complete control by the ruling party.
[161] Kielslow 2006:64

depending on the vantage point with environmental movements. One reason for the greater acceptance of environmental protests is that they are seen as addressing local and not systemic problems. Should the character, or the leadership's perception of environmental protests change, then a cycle of repression and radicalisation could be set into motion.

Fears about the stability of China in connection with food security as well as economic stability have been voiced in previous research. However, Jack Goldstone points out that '[c]hanging balances of population and farmland do not threaten the Chinese people with starvation; but they may threaten the state with revenue starvation and political crisis unless the state can adapt to new circumstances'.[162] Goldstone sees parallels between today's situation and previous periods of dissolution and decline in Chinese history; the common factors being decreasing availability of arable and productive land, increasing tensions due to rising prosperity and population increase.[163] In a similar vein, Pei links the decreased governance capacity of the Chinese state to its inability to tackle the country's vast environmental problems. Conversely, the environmental problems pose a threat to China's continued economic development while increasing the likelihood of natural disasters and lower living standards for the majority of the Chinese.[164]

Although the number of popular protests has risen sharply in China, certain objections can be raised to the hypothesis that environmental changes or climate change effects may increase the number and intensity of protests and that they will have political ramifications. The first objection concerns the assumption of a rise in the number of protests, the second the government's ability to handle them and the third the possibility of popular protests to materialise into mass movements.

China has a number of environmental problems, for instance air pollution, that directly affect human health and habitats. It has also seen huge changes in the natural environment, such as the construction of the Three Gorges Dam, which has caused relocation of about 1.3 million people.[165] The construction of this and other dams has led to corruption, environmental degradation and poverty, and many human rights violations have been inflicted upon the displaced people.[166]

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[162] Goldstone 'Debate' p.69 For a more recent argument that China is facing a systemic crisis see Pei, 2002 particularly pages. 99 & 101

[163] Goldstone 1995:39, 41

[164] Pei 2002:102-103

[165] See the website of the International Rivers Network http://www.irn.org/programs/threeg/ access 2007-08-08

[166] For an overview of the consequences of dam construction in China see Heming, Waley, and Rees, 2001

So far, the massive environmental degradation has not sparked well-coordinated mass mobilisations across the country. The doubtful probability of environmental issues causing an increase in protests contrasts with the likelihood of increased protests due to strictly economic reasons, such as widening gulfs between educated and non-educated and rural and urban workers.[167] Articles pointing out the resilience of the Chinese system note the strength of its economy and the prolonged lease of life given to the Communist party by incorporating traditional Confucian values into its discourse.[168] However, the arguments that the ecological problems that brought about by China's recent development can prove destabilising are not met in such articles. It appears to be relatively clear that the connection between environmental degradation, climate change and the possible destabilisation of China is mediated through the effects of the former on the country's economy. However, a necessary condition for destabilisation is however that localised popular protests and rioting become coordinated and coalesce into social movements.

China's central government has shown itself to be adept at using a combination of repression, pre-emptive action and accommodation to quell or direct protest movements.[169] One should also take into account that the People's Liberation Army (PLA), currently 2.25 million strong, has a high capacity for dealing with natural disasters such as flooding and earthquakes.[170] However, the relative strength of the PLA, and the Communist Party's reliance on it, may alienate other non-army elite groups in China, thus decreasing societal cohesion.[171] Finally, protest movements in China tend to be localised, with few ambitions or possibilities of establishing linkages with other protesters in the same issue area but in other parts of the country.

Protests among different groups in Chinese society have different potential for political destabilisation. Lum notes that the leadership of the PRC as well as political analysts consider protests by Chinese workers as having greater potential political impact than protests by farmers. Workers have greater access to communications, are closer to centres of power and, it should be added, are more economically important to China.[172] The groups with the best access to channels of communication, the educated middle classes, tend to have benefited

[167] Keidel 2005:7
[168] For an example see Huang 1995
[169] Lum 2006:8-11
[170] International Institute of Strategic Studies 2007:346-351
[171] Goldstone 1995:45 For a recent survey of China's military build-up which argues that, despite recent acquisitions of sophisticated weaponry, estimates of its strength, particularly for external power projection may be exaggerated see The Economist 2007d
[172] Lum 2006:5

from recent developments and are in many cases removed from sources of environmental degradation.[173] If the effects of climate change were to affect these groups in tangible ways, e.g. flooding of major cities or obvious incapacity of the government to address adaptation issues, then the conditions for mass movements across China might change.

If social movements in these two issue-specific areas (environmental degradation and climate change) were to materialise in force they could be perceived by the PRC leadership as challenges to the political system. Two main options would then be open to the leadership, co-optation or repression. If repression is chosen then the protest movement might gain strength, particularly if it had a large base of latent support from the start. This in turn could also cause our hypothetical social movement to broaden its original agenda in response. Such a broadened agenda might include political reform or changes in the leadership structure (but with the system intact). The probabilities of this occurring might increase if the original problems, climate change effects and environmental degradation, are not adequately addressed by the government.

As noted above, Sinologists and other China analysts who argue that the resilience of China is often under-estimated do not deal with ecological factors or directly with climate change. However, as noted by the Stern Report, the effects of climate change could have a very negative impact on the world economy. Such a development would directly affect China's economy and thereby potentially its political stability by triggering social movements and/or by decreasing the regime's capacities for control. Decreased growth or even an economic recession could make certain parts of the population more exposed to socio-economic hardships and possibly to climate change effects as well. In turn, such exposure could make them more prone to social mobilisation and process. An economic downturn would probably not impair the coercive apparatus of the state that can be used internally, e.g. the police and armed forces, because – given China's history and dominant ideology – the government would take care not to have its core capabilities affected. The more expansive and hence expensive external capabilities of power projection, such as the plans for constructing a blue water navy and other high-cost schemes of military modernisation could however be affected.[174] The real potential for destabilisation would occur if groups that are insiders, or that belong to the middle classes that provide crucial support to the legitimacy of the regime become dissatisfied or find their social positions threatened.

[173] Lum 2006:13 For a recent report on middle-class protest in China and their use of information and communication technologies to mobilise, see The Economist 2007c

[174] For a report on such plans see The Economist 2007e

In addition to reinforcing China's environmental problems, climate change may bring problems of its own to China. One of the country's chief vulnerabilities in relation to climate change is the relocation of industries to the coast in cities like Shanghai, Guangzhou (Canton) and the New Economic Zones (NEZ) from their previous inland locations.[175] This means that the main source of China's economic strength is now located in areas that are exposed to sea level rise and flooding.[176] This could prove detrimental not only to the Chinese economy as a whole but also to that of its burgeoning middle class, which as we noted above, is a key factor in determining the legitimacy of the regime and a potential key in turning popular unrest among workers and farmers into a mass movement.

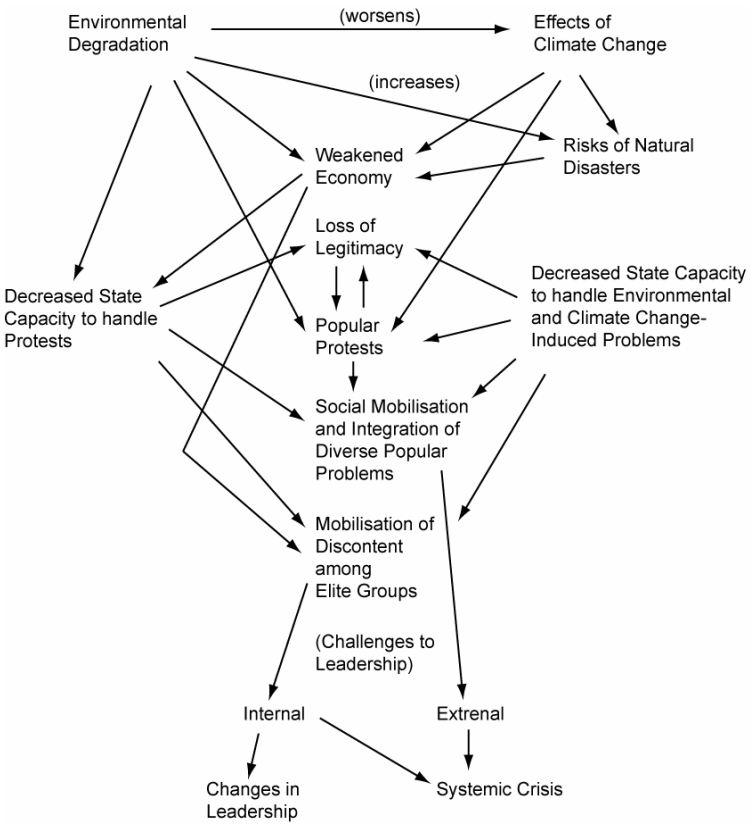
If mass movements that challenge the regime as a whole or the incumbent leadership were to arise or – in the most dramatic scenario – if a systemic crisis were to occur because of an economic downturn, the following consequences are foreseeable. A systemic crisis of political legitimacy in China could be serious, primarily to the world economy as it might affect foreign direct investment (FDI), China's manufacturing industry and forestall China's possibilities of becoming a player on the global financial markets. Secondarily, though, internal unrest, possibly of such a magnitude as to warrant the label 'systemic crisis', could have political ramifications, possibly in the form of a struggle over leadership between elite groups. A possible scenario could be that the ruling fraction that eventually does establish power would be more hard-line than the present leadership. This in turn it might worsen China's relations to its neighbours, particularly if current patterns of international trade and economic interdependence are disrupted. Furthermore, a Chinese government that is more suspicious than the current regime might may also render collective diplomacy through the UNSC more difficult. While such scenarios are worrying, it should be stressed that they are several steps, each fraught with uncertainty, from materialising. The two core questions that remain, however, and whether China is capable of addressing and amending environmental degradation and climate change effects and if the political system can be made more flexible so as to accommodate protests and grievances without these being seen as challenges to the entire system.

It should be noted that measures are being taken by the government that could improve the environmental situation and strengthen China's capacity to adapt to

[175] Keidel 2007
[176] Stern Review Report 2007:77

climate change.[177] Despite these promising signs, the combination of climate change, environmental degradation and economic downturn could catch China in a recursive movement between several factors that all contribute to instability unless the problems outlined above are dealt with. The figure below illustrates the argument pursued in this section by outlining interconnections between problems and hypothetical developments, which are discussed in the text. The seriousness of these problems is illustrated by the large number of factors that are connected to each other and by the number of reinforcing feedbacks between them. A brief study like the present cannot discuss the probability for each step but taken together, render a situation of considerable risk.

A model of the connections between environmental degradation, climate change and destabilisation in China



[177] For an overview, see Zhi, Totten, and Chou, 2006 The Stern Review (2007c:xxiv) also notes that 'China has adopted very ambitious domestic goals to reduce energy for each unit of GDP by 20% from 2006-2010 and to promote the use of renewable energy'.

The Southeast Asian subcomplex

As Finlay points out, Southeast Asia is one of the regions of the world that is relatively unaffected by internal armed conflict.[178] The stability of this region and of the internal stability experienced in other Asian countries, e.g. South Korea, is to a large extent the result of the vigorous economy, the growth of regional institutions (ASEAN), and the decline in foreign intervention into the area.[179] This development since the 1970s is remarkable given that the region was one of the worlds poorest and most conflict-ridden in the 1950s and 1960s. In light of these historical developments, the greatest concern for this region is how climate change will affect the economy.

The South Asian RSC

The south Asian security complex is dominated by the relationship between India and Pakistan. The patterns of the South Asian security seem to be remarkably stable and, considering the consistency of the situation during and after the Cold War, relatively immune to external influence.[180] This relationship does not only determine politics in the region but also has an impact on global politics since the persistent rivalry with Pakistan prevents India from fully emerging as a global player.[181] Our main angle on the South Asian RSC under conditions of climate change hence concerns how this relationship, which is the pivot of the politics of this region, is affected by climate change. Given India's military and political dominance on the sub-continent, climate change will have major security policy implications only in so far as the relationship between India and Pakistan, which in part is a function of the strengths of the respective states, is changed.

Consequently, the key to the region's future lies in Pakistan, a country marked by civil unrest, collapse of the state level, corruption and stagnant economy and by secessionist movements. Since the 1960s, Pakistan has decayed considerably and consequently waned as a threat to India.[182] The decline of Pakistan has given India more room to manoeuvre, including making bids to global power status, which has so far been denied it by the great powers. However, India has been more successful in expanding its diplomatic sphere into other parts of Asia where it may have greater potential for future success. In relation to climate change, the emergence (but not complete escape) of India from its immediate security environment in combination with its economic growth means that it is much

[178] Finlay 1996:173
[179] Finlay 1996:184-89
[180] For a recent study of the persistence of the India-Pakistan conflict see Paul 2006
[181] Buzan & Wæver 2004:121
[182] Buzan & Wæver 2004:115-117

better placed to become an active player in the global politics of mitigation of and adaptation to climate change. If Pakistan were to suffer large-scale destabilisation and decline, either due to strictly socio-economic reasons or in combination with climate change effects a problematic but not necessarily disastrous security situation would follow. Whether this will occur or not is, however, beyond the scope of this report.

Bangladesh has been at the centre of a lot of attention in debates on climate change and is likely to be affected by sea level rise as well as by flooding due to increased precipitation levels. However, the security political effects that this will have are dependent on the strength of the Bangladeshi state as well as on India's position. Should Bangladesh become a failed state, then India might intervene to stabilise it as it did during the war of 1971, which transformed East Pakistan into Bangladesh.

Could the effects of climate change, e.g. flooding, generate issues, e.g. refugees, that could lead to conflicts at a sub-state level on both sides of the India-Bangladesh border? This question is difficult to determine, as previus migration from Bangladesh to West Bengal has "generated tensions" but so far failed to create conflict between countries, regions and communities.[183] Whether this pattern of stability might change in the future hinges upon two factors, both of which are difficult to predict -the number of future migrants and the leadership of West Bengal.

The predictions of climate change in India as well as South-East Asia, estimates have been made that in 2100 the costs of climate change could amount to as much as 9-13% of GDP compared with a world without climate change.[184] As an example, recent heat-waves in India, coinciding with failure of the monsoon rains, amounted to a 3% loss in GDP due to harvest failures.[185] Climate change may thus impair the economic development in countries like Bangladesh, India and Pakistan. The effects of climate change on agriculture in South and South-East Asia are serious since this sector accounts for substantial shares of GDP as well as employment rates.[186] Based on an A2 emissions scenario, studies have found that across northern India, crop yields may be reducedby between 30-60%, with extremes up to 70%.[187]

[183] Ganguly 1996:161
[184] Stern Review Report 2007b:92
[185] Stern Review Report 2007b:94
[186] For example, agriculture accounts for 21% of GDP in India and 61% of the population of South Asia are employed in this sector. Stern Review Report 2007b:95
[187] Stern Review Report 2007b:104, footnote 58

Due to its current climatic extremes (e.g. monsoon floods and dry-season drought) the region is sensitive to even slight effects of climate change.[188] Various reports have called attention to the melting of glaciers in the Himalayas and the Hindu Kush mountains due to climate change. This may have a negative impact on water supplies in India and Pakistan. This impact might consist of flooding in the short term but reduced flows if or when the glaciers disappear. Like elsewhere, cross-boundary waters are carefully regulated in international treaties and in some cases managed through multilateral commissions. The most important of these, in terms of both numbers of people affected and in terms of the security political impacts is the Indus Water Treaty of 1960.[189] Agriculture in Pakistani territories has relied on water from the Indus for centuries but after the partition of British India in 1947, the sources of the river were located in India. Despite the hostile political relations between the two countries, they have managed to resolve the issue of water rights through a deal that allots a generous share of the Indus waters to Pakistan.[190]

Consequences of mitigation – adaptation measures

The most important aspects of the politics of mitigation and adaptation involving Asian countries will probably be played out on a global rather than regional level. Both China and India have expressed an unwillingness to concede mitigation of emissions of greenhouse gases with reference to their right to economic and industrial development. This stance puts them in opposition to the EU in negotiations on climate change. Present and future political disagreements are made more complicated by the issue's link to development, world equity and poverty issues. Instead of attempting to de-couple these issues from each other, the potential deadlock between the EU and China and India could be resolved by accepting the connection between climate change, development and global equity. However, such arguments must attempt to shift the emphasis in this connection away from strategies to amend poverty through fossil-fuel intensive industrialisation. A strong instrument in this respect would be the argument that unmitigated climate change and lack of adaptation measures to changes that will occur due to emissions already made will impede development and poverty reduction. In order to credible, such argumentation must be complemented by technology transfers that enable developing countries to reduce their carbon

[188] Stern Review Report 2007b:104

[189] For the full text and commentary see http://web.worldbank.org/WBSITE/EXTERNAL/COUNTRIES/SOUTHASIAEXT/0,,contentMDK:20320047~pagePK:146736~piPK:583444~theSitePK:223547,00.html access 20070810

[190] Indus Water Treaty http://transboundarywaters.orst.edu/projects/casestudies/indus.htm. access 20070813

emissions, increase energy efficiency and deal with the impacts of climate change.

3.2.4 The South American Regional Security Complex

Introduction

South America[191] is a region that is interesting to compare with Africa because of the similarities in terrain, presence of armed militias and relative weakness of the state but also because of the differences; namely South America's relatively strong and industrialised economies and, in most cases, accountable governments. It provides an interesting bridge to the Asian regions due to the ambiguous character of the state in South America, which is strong enough not to fall apart like in some parts of Africa, but at the same time not so strong as to be able to mobilise for war and conquest.[192] Because of its fledgling but nevertheless resilient international institutions, most importantly Mercosur, it is also an important object of comparison with similarly institutionalised areas, Europe/EU and South-East Asia (ASEAN). In order to probe the possible ways climate change could affect security politics in the region, the same approach as in the previous section is applied, with an analysis the nature of the state, international relations and external penetration in the region and examination of whether these factors are likely to be seriously affected by climate change. The issue of state interaction capacity is also addressed. There follows a discussion on how the basic geopolitical conditions, i.e. terrain, may be affected by climate change and how such changes could affect security politics. Consequences of mitigation and adaptation policies in the region as well as on a global level are also discussed. The section concludes with what is called a 'wild card', the consequences of climate change in the Antarctic.

States and International Relations

As noted above states in South America can appear rather ambiguous since the state level in most cases is quite strong but it does not penetrate all of civil society, a trait that accounts for the huge disparities in income and for the many fractures and divisions in the societies of the continent. South American states do not however have the same patrimonial, predatory and regime-like character as

[191] South America has for some time been divided into two relatively separate sub-regions, the Southern Cone (Argentina, Bolivia, Brazil, Chile, Paraguay, and Uruguay) and the Andean North (Colombia, Ecuador, French Guiana, Guyana, Peru, Suriname, and Venezuela). This section will take this division into account. Buzan & Wæver 2004:336

[192] Buzan & Wæver 2004:312 (following Hurrell 1998:239)

many states in Africa. Despite the strong tradition of populism in many countries, states that are clearly separated from the regime in power are firmly entrenched in South America, which is a great in comparison with Africa. For this reason, although climate change effects as well as the economic downturn that could result from unmitigated climate change, may lead to significant losses in state interaction capacity, the effects may not be as corrosive. However, given South America's much greater role and future potential in the world economy, a development that would weaken and/or destabilise the countries of the continent would have more serious global ramifications.

As in most regions surveyed in this report, the most important consequences of climate change for security politics will probably fall within states rather than between them. Although the states of South America are not as poorly integrated as those of Central and West Africa, they are nonetheless fraught with tensions and huge disparities in standards of living and income. This is worrying for several reasons. 1) Such differences impede the growth of these countries' economies, a central factor in creating adaptation capacities. 2) The differences in economic standard are in themselves corrosive and might disrupt societal stability, which is also necessary for societies to be resilient in the face of climate change. 3) the differences between large segments of the population in practically every country in the region means that climate change will have highly unequal effects on different socio-economic strata. Combining traits of the 'first world' and the 'third world' within closed geographical confines, South American countries are miniatures of the global differences in affliction by and adaptation capacities to climate change. This may in itself be destabilising since economic differences may either become politicised on a mass scale or give rise to collective action against the authorities or between local communities (i.e. urban-rural unrest). Furthermore, the economic straits that climate change could bring would be a huge blow to policies of social development and reduction of poverty around 2050, possibly permanently impairing such efforts. To avoid fissures becoming fractures in the face of the economic, social and potentially political strains that climate change may bring in the future, reduction inmass poverty in a sustainable way the next twenty to thirty years ought to be a top priority for South America.

Concerning international relations, South America has a relatively long history of conflicts and patterns of regional politics that are not shaped by the colonial past but that are indigenous to the region. There were significant interstate wars throughout the nineteenth century during which the borders of the modern states of the region were established. The fact that there have been relatively few wars between states in South America is, as noted above, due partly to the character of the state, but partly to the harsh and difficult terrain that separates the core areas

of the states from each other. A number of terrain types, the Andes mountains, dense jungles and harsh deserts to name a few have impeded contact between the South American states and provided most of them with effective natural defences. Although the states are not as isolated from each other as in parts of Africa, the region nevertheless is only moderately integrated. An example of this fact is that even the most persistent security relationships, e.g. Chile-Brazil, have not solidified into a European-style balance of power.[193]

The structure of the international system in the Southern Cone has also influenced this pattern, with two major actors, Argentina and Brazil, and numerous smaller actors. The dominance of Brazil in particular has played an important role as a regional stabiliser for the Southern Cone as well as for the Andean North. The country has gradually become a status quo power in the region and a positive turn towards stability was achieved through Argentina's acceptance of and support for this role. [194] Overall, conflicts in South America have been largely on a sub-state level with governments, paramilitary militias (Colombia), drug lords (Colombia), insurgents (Bolivia), crime syndicates (Brazil) as principal protagonists. Arguing deductively, there is little to suggest that this pattern in susceptible to change due to climate change.

Since the 1980s and the end of the military governments in the Southern Cone, dramatic changes have occurred in the international relations of the region. The coming to power of elected and accountable governments has reduced the role of the military forces in Brazil and Argentina and, since the 1990s, in Chile. One effect of this has been the desecuritisation of international relations and internal affairs. In the terminology of Buzan & Wæver, the region has been transformed from a conflict formation to something more akin to a security community. The three principal components of this change are 1) the rapprochement between Brazil and Argentina, 2) the regional integration in Mercosur and 3) the resolution of border questions.[195] Particularly noteworthy is the stabilisation of the region through the collaboration between the states of the region through Mercosur. This collaboration has also boosted the economies of the region, which together with the increasing democratisation, has furthered stabilisation.[196]

The crucial question for the future of South America is how solid the reorientation of the region into its current state is.[197] The fact that both Brazil and Argentina refrained from reverting to old confrontational patterns during the

[193] Buzan & Wæver 2004:316-17
[194] Buzan & Wæver 2004:313-14
[195] Buzan & Wæver 2004:322-23
[196] Buzan & Wæver 2004:324
[197] Buzan & Wæver 2004:338

Asian financial crisis and economic chaos in Argentina in the later 1990s is a promising sign of lasting change. However, the recent and unexpected nature of this reorientation should serve as a cautionary tale against over-confidence in making prognoses for the future.

Conflict dynamics in South America have been significantly influenced by outside penetration, primarily by the United States. This was the case during the Cold War, when the ideological struggle of the period reinforced tensions within South American societies, as well as during the 1990s, with the US as a major actor in the war on drugs in Colombia. The necessity of taking a position vis-à-vis the US has also played into international dynamics in the area. In a South American context, whether a country has chosen alignment with or rejection of the US has meant taking a position on external dominance in regional diplomacy. The current anti-Americanism of the Venezuelan President Hugo Chavez and to a certain extent of his Bolivian counterpart Evo Morales should be understood in this context.

South American politics could be influenced in this respect not so much by climate change itself but by the politics of mitigating and adapting to climate change. It is conceivable that some leaders may try to use this issue as a way of building anti-American coalitions in order to bolster their standing in the region. Such schemes could be outlined both by rejecting mitigation efforts as a plan of the developed countries to thwart the industrialisation of the developing world and by blaming the developed countries, among them the US, for the adverse effects of climate change. The force of such hypothetical policies is hard to gauge but could be argued to be influenced by several conditions: The gravity of the consequences of climate change for South America, dominant currents in international relations in South America, the position of the US in the politics of climate change andits diplomatic astuteness and the positions of the leading states of South America, Argentina and Brazil, vis-à-vis the US.

The outcome of such, again hypothetical, external influence on regional dynamics depends on many other factors in intra-regional relations. Considering that the current efforts of President Chavez to create a counter-balance to the US are more of an irritant than a multiplier of tensions in the region, a tenser overall political climate is probably required for climate-change related anti-Americanism to become a significant factor in security politics. Although it might increase tensions, it is unlikely to be a cause of conflict in itself.

Geopolitical Changes

Considering that the geography of South America has been an important factor in limiting inter-state conflict and in providing various kinds of terrain conducive to insurgents could climate change possibly change this element of the region's political landscape? First of all, the biggest topographical change that the continent is undergoing now and over the coming fifty years is man-made, although significantly connected to climate change: the destruction of the Amazonian rainforest. Since the effects of this process on climate change has been dealt elsewhere, the following deals only with the impacts of this process on security politics.

Brazil's exploitation/development of its Amazonian provinces will bring its settled and economically developed areas closer to neighbouring states such as Ecuador, Peru and Colombia. Although the reduction in the natural buffer area of the rainforest is not likely in itself to lead to increased security interaction, for example through increased contact between Brazilian security forces and guerrillas from Colombia seeking refuge across the border, it changes the geographical conditions of military action in the Andean North.

Could the environmental protection and mitigation of climate change become a security issue in South America? Tendencies to 'internationalize' Amazonia, to cast the status of the area and its rainforests as a global matter of concern, have been seen in some military circles and in very extreme scenarios as worrisome to Brazil.[198] This is due not only to the fact that it is part of the territory of Brazil, also that it is also a region of great resources and the Amazon has always had a special place in Brazilian narratives about nationhood, similar to that of the frontier' in US national narratives. Although international interventions to save the rainforests are probably too spectacular to materialise without substantial changes taking place in international politics in the near future, steps need to be taken to assuage all and any security fears on the part of the Brazilian establishment in connection with conservationist policies and the efforts to preserve the Amazon rainforest, not least as a carbon dioxide sink. Exploitation of the Amazon through a large-scale destruction of the rainforest is an issue that might worsen Brazil's diplomatic reputation in a future world in which environmental protection and combating climate change have become dominant themes.

[198] Buzan & Wæver 2004:332-333

Consequences of Mitigation – Adaptation Measures

The B2 scenario of the IPCC presumes reductions in global fossil fuel use and a greater emphasis on technologies that do not lead to emissions of greenhouse gasses. Brazil is the world's second largest producer and largest exporter of sugar cane based ethanol.[199] The country is also the world leader in use of ethanol and has a large degree of hydropower in its energy portfolio.[200] This means that Brazil, a stabilising regional hegemon and the leading economy in South America, stands a chance of being resilient under a scenario of decreased fossil fuel use. This in turn, this bodes well for the stability of the Southern Cone, and possibly for the northern part of the continent as well. Not only is a strong Brazilian economy an important factor in preserving internal stability, democracy and development, it is also important for the economy of the region as a whole. In the last instance, an economically strong Brazil means that its interaction capacity remains intact which means that in the event of the security situation in any of the neighbouring countries becoming problematic, then Brazil's role as a stabilising power and possibly peacekeeper might still be functional.

In the Andean North, the positions of some states that will affect the international politics of the region, also hinge upon whether the world will continue its current fossil-fuel intensive development path. The international role of Venezuela, currently a major exporter of oil[201], hinges upon how demand for fossil fuels develops. The country is highly dependent on oil, which accounts for 90% of export earnings and more than 50% of the federal budget reserves.[202] Consequently, a future scenario that includes significant reduction in fossil fuel use would seriously impair the ability of Venezuela to pursue expansive foreign policies.

The Antarctic 'Wild Card'

The section below deals with the future of the Antarctic, an issue involving the South American RSC that has featured as possible security concerns in more speculative and/or long-range scenarios. In the section on the Arctic (Section 4.2), we argue that climate change may transform the region into one of far greater importance for security politics. The situation in the Antarctic is

[199] http://www.worldenergyoutlook.org/fact_sheets/fs_brazil.pdf access 20070718 for statistics see http://www.iea.org/Textbase/stats/renewdata.asp?COUNTRY_CODE=BR access 20070718

[200] OECD/IEA (2006) *The Energy Situation in Brazil: an Overview* http://www.iea.org/textbase/papers/2006/brazil.pdf access 20070718 p.2, 11-12

[201] For statistics, see http://www.iea.org/Textbase/stats/oildata.asp?COUNTRY_CODE=VE access 20070718

[202] https://www.cia.gov/library/publications/the-world-factbook/geos/ve.html#Econ access 20070718

somewhat different for several reasons. The IPCC reckons that '[a]t the end of the 21st century, the annual warming over the Antarctic continent is moderate but significant'.[203] Although global warming could in the long run, i.e. beyond 2100, "initiate millennial-scale processes with the potential to cause irreversible impacts on ice sheets, global ocean circulation, and sea level rise" the IPCC notes that '[e]xcept in the Antarctic Peninsula, the Antarctic and the Southern Ocean will probably respond slowly to climate change'.[204] Hence by 2050, current conditions the Antarctic are unlikely to have changed. Beyond this period, the region could become important in the distant future and the stakes involved are potentially quite high.[205] It should be noted that if the Antarctic were to warm sufficiently to allow resource extraction, settlements or possible military operations, then the world's leaders would have far more serious issues on their hands, given the degree of sea level rise this development would entail.

Within the period that this report covers, however, the Antarctic, an area where international politics have been locked in place by the 1961 Antarctic Treaty System (ATS), is not likely to become the focus of conflicts due to climate change or for any other reason. Logically the Antarctic continent could become important for security interactions for the following reasons:

1. The climate changes so much in the Antarctic that it becomes possible to exploit mineral resources or fisheries. This seems very unlikely to happen in the near future due to climate change.
2. Climate change would lead to an increase in the strategic importance of communications. This is also very difficult to envision since there are no gains to be made through reduced transportation costs over the South Pole and climate conditions will not change to the same extent as in the north.
3. Perceptions of security relations become much more securitised among the countries that have a stake in the Antarctic (i.e. the partners to the 1961 ATS) which would lead to a revision of the treaty and a scramble for positioning in the Antarctic. The international expertise on climate change has not given any indication that the Antarctic climate will change sufficiently to warrant perceptions that the area would gain in strategic importance. Furthermore, because the extremely adverse climate conditions in the area are unlikely to change in the near future the logistical preconditions of basing troops or other personnel in the area will be too difficult to warrant the effort. If security relations between the ATS parties

[203] Christiansen et al2007:908
[204] IPCC 2001b:831
[205] Buzan & Wæver 2004:316

were to deteriorate for whatever reason, the changed relationship would probably be expressed in other more accessible areas than Antarctica.

3.2.5 The West European Great Power Subcomplex

Introduction

It is very difficult in general to draw up scenarios for the evolution of new political forms, and within the scope of the present study such a task cannot be undertaken. Nevertheless it is a question that underlines all scenarios or speculations involving the future of Europe –what will the EU look like in the future? Given the EU's current ambitions to play a larger international role, this question may also have implications beyond its borders as well. The stratagem used in this study is to assume the existence of the EU in the basic form that it has today, a mix between a states-system and a common polity, giving it elements of great power concert, (heavily modified) inter-state dynamics and a form of state. By 2050, we assume that the Balkan states will have become members. However, for each region possible consequences of developments that today, in 2007, remain uncertain, such as the membership of Turkey or a more robust and institutionalised capacity for power projection are discussed. Nevertheless, in both this and following analyses, the possibility of fissures within the EU must not be excluded; they are indeed crucial hypothetical objects of research.

Consequences for the EU

Research on how climate change could affect politics within the EU, in particular with regard to the stability of the Union, is non-existent. Research has been produced on the climate policies of the EU on regional and on international level, but non on the political and social effects of climate change on Europe itself.[206] In general, there is very little research on what kind of developments, endogenous and exogenous, that could endanger the stability of the EU or on how the EU reacts to crises that could destabilise or even fragment it.[207] The security strategy of the EU brings up global warming as a contributing factor to future instability and threats to security, but only in relation to processes outside of Europe.[208] Although plenty of research is underway on the technical issues of

[206] See for instance Egenhofer, Jansen, Bakker & Hammes 2006 and Peeters, & Deketelaere (eds.) 2006
[207] An exception is Haldén 2006
[208] It should be noted that climate change features only marginally in the security strategy of the EU European Union 2003:6 & 15

adaptation and mitigation, no policies have been drafted and very little systematic discussion has been undertaken on how to avoid grievous social and political consequences within Europe. In contrast to earlier research of the aforementioned kind, this section treats the question of whether climate change could weaken the stability of the EU and thereby of the security of Europe. A fundamental assumption in this study is that the EU has played a crucial role in providing Europe with security since 1945. The conclusion is that climate change confronts the EU with a series of challenges but its destabilising potential depends to a large extent on decisions and event within other issue areas. The text below develops the argument.

According to the climate change scenarios developed by the IPCC, Europe will be very unevenly affected by climate change.[209] The warming in Europe will be higher than the global average and the warming in Northern Europe will occur during the winter season whereas in Southern Europe and the Mediterranean areas it will occur in during the summer season.[210] Such developments will entail, at least in the short run, certain advantages for Northern Europe, such as longer growth seasons whereas they may entail considerable strains on Southern Europe. The latter will principally comprise increased stress on agriculture due to droughts, heat-waves and water shortages. This will have negative add-on effects on their economies, a development probably aggravated by the losses which are expected for the tourist industry. However, certain aspects of energy production may also be affected. Apart from such effects societies in Southern Europe may also be under strain within the health sector. However, up until the middle of this century increases in temperature will probably not be so great as to render substantial areas of Southern Europe uninhabitable.

An understanding of the consequences for European agriculture is highly relevant toin ascertaining the conflict-inducing potential of climate change for Europe and for the EU. Classical geopolitical literature emphasises the importance of being able to support the population for the survival of a country.[211] These arguments may seem arcane in this day and age and in our part of the world but the basic issue remains as a precondition of social stability. Up until the year 2050, the upper limit of this study, Europe will probably not experience any substantial problems in safeguarding food security for its population. For instance, according to the IPCC, production of wheat in central Europe and the British isles will probably increase whereas it will decrease in certain parts (but

[209] cf. Christiansen et. al. 2007:875
[210] IPCC 2007b:872
[211] For reviews of this literature see Parker 1998 and Gray & Sloan (eds.) 1999. A classic that treats the connection between the supply of foodstuffs and strategy is Spykman 1944

not all) of Southern Europe. [212] Production of potatoes will increase or remain unaffected, as will production of energy crops. However, the outstanding issue is to ensure that there are working mechanisms for a European market for foodstuffs in order that areas experiencing difficulties with food production are provided access to surplus food produced elsewhere. It is worthwhile emphasising that subsidies at state or EU-level may be necessary due to the problematic consequences that may ensue if a free market regime cannot guarantee food security.

This raises the question of the future of the Common Agricultural Policy (CAP), which today subsidises large parts of the European agriculture. [213] The original function of the CAP was to ensure that Europe/EEC would be self-sufficient in the event of a significantly worsened international political climate. [214] This purpose has to some extent fallen into oblivion and figures only to a marginal extent in the contemporary debates on the CAP. However, in a future where regions that are currently global exporters of food stuffs are unable to export cereals, vegetables and meat due to droughts (e.g. Australia and New Zeeland)[215] and where a reduction of long-distance transports is necessary in order to cut CO_2-emissions a maintained consistently strong European agriculture could prove to be a significant strategic asset. Maintaining this strength of European agriculture could also be seen as a measure for mitigation and adaptation to climate change.

Could the European agriculture policy constitute a future reason for conflict? Under the condition that the EU is intact and works in roughly the same way as it does today, the potential conflicts would be political rather than military in nature. However, it would be important to introduce increased flexibility in the CAP which would enable support to be redirected at relatively short notice to areas that are affected by drought, floods, or extreme weather events to a greater extent than is possible under the current regulations. Such a reform would be

[212] IPCC 2001b:668-69 & IPCC 2007a:9-10

[213] The CAP cost 43 billion euro in 2004 http://ec.europa.eu/agriculture/publi/capexplained/cap_en.pdf access 20070511 s.29

[214] Nugent 2003:387

[215] At the time of writing, Australia is affected by a difficult and long drought that threatens the agriculture in the entire Murray-Darling river basin. According to David Dreverman, head of the Murray-Darling river basin commission, this drought is a so-called 1000-year event. http://www.guardian.co.uk/australia/story/0,,1941942,00.html accessed 20070508. If events of this kind become more common in the future it will lead to great uncertainties concerning the country's export of agricultural products. See http://www.bbc.co.uk/weather/world/news/19062005news.shtml accessed 20070508 For as ummary of Australia's climate under April 2007 see *Australian Monthly Climate Summary: April 2007* For an estimate by the IPCC see IPCC 2007b:9

particularly important since the volatility of harvests could come to increase in comparison with today's conditions.[216]

An important issue of future priorities could be whether pastures should be used for the cultivation of energy crops or for the cultivation of foodstuffs. A transition to more European-produced goods on the consumer markets of Europe could be seen as a part of a strategy to cap emissions. If this leads to increased demand for agricultural land then the necessity of making strategic prioritisations between foodstuff production and production of energy crops increases. The same applies if the EU member states decide that increased production of energy crops is a suitable way to decrease dependence on fossil fuels.

It is evident that the future will bring great challenges and strains from both an environmental and climate perspective, even if we choose to adopt comprehensive mitigation/adaptation strategies, but even more so if we fail to adopt such strategies. In a global situation of the kind that we may face in 2050 this report stresses that it is important that permanent fissures and/or formal subdivisions have not been created within the EU. From time to time proposals are launched that aim to divide the Union into formalised sub-groups with various degrees of integration. Even if such divisions were without destabilising effects in periods of international calm, this could create the preconditions for conflicts under more adverse international conditions. For this reason, the report argues that it is important that the EU remains intact and that the EU member states tackle future challenges and adaptation measures jointly in order to safeguard stability on the European continent. This argument may seem fanciful but sixty years ago when neither the EU nor NATO existed to channel international relations in Europe into peaceful intercourse, the preconditions for conflict were very different from what they are now. Unless the stability of the EU is safeguarded –and such measures largely take place in policy areas other than those directly relating to climate change– we could see a reversal to conditions like those prevailing previous to 1945, especially if the international system becomes more unstable and if many states experience considerable stress, e.g. from climate change.

Just like on the international level mitigation and adaptation measures may lead to conflicts within the EU. These conflicts are likely to be played out between interest groups on national levels as well as between governments and interest groups on an EU level but probably to a lesser extent on an inter-state level. Inter-state dynamics of conflict, although probably not likely of a military kind, may come into play since many mitigation and adaptation measures may require

[216] IPCC 2001a:667-69

joint EU measures, actions or financing. To the extent that such measures require additional integration of the EU, open as well as latent conflict dynamics between different member states in the overarching question of more or less integration could also be brought into play.

The issue of climate refugees has been raised in connection with the EU in negative terms, i.e. as a threat.[217] However, considering the negative demography in many European countries, increased immigration may, if it is carefully managed and if steps are taken to integrate the immigrants, may be a solution to the negative demographic trend. In other words, and contrary to much of the current popular debate, migration is not exclusively problematic nor are the problems that migration may entail inherent in it as a phenomenon. Even more important is the task of adopting coherent policies on immigration. As noted above, failure to produce such a policy or manage either the negative effects of climate change or emigration from the Maghreb may have grievous and destabilising effects on the countries along the southern Mediterranean coast.

Examples of outstanding questions regarding the EU and climate change are whether joint endeavours will be needed to protect coastlines that are exposed to sea level rise? Will this aim require new structural funds? As a consequence new challenges to EU solidarity could arise if such measures are not formally institutionalised and/or executed successfully. A complicating matter is the Europe's coastal states are unequally affected, e.g. Poland worse than Germany.

[217] CNA 2007:9

4 Thematic Issues of the Interface between Climate Change and International Security

This section deals with a number of themes independently and more in-depth than in the regional analyses of the previous section. It is hoped that this approach will make it easier for the reader who is interested in a specific topic go obtain direct access to an analysis of the problems connected with the issue. Although none of these issues can be treated in isolation, either from other issues or from the general context of the climate change scenarios, this approach is also a way to give particular attention and detailed coverage of issues that are central to scholarly debates, public attention or to security policies. Of course, it goes without saying that these concerns are intertwined and each theme is important to all three. Each theme is introduced separately under its own heading.

4.1 Strategies of Adaptation and Conflicts

4.1.1 Introduction

So far, this report has dealt with the relationship between climate change and conflict in a linear way by discussing, exploring and sometimes criticising the idea that the former may, in different and sometimes roundabout ways, lead to the latter. The role of adaptation in that equation has been of inhibiting, avoiding or softening the relationship between climate change and conflict. This section continues the exploration by inquiring about the recursive nature of adaptation and conflict, in other words, the potential ways in which adaptation to climate change could provide permissive causes for conflict.[218]

The notion of risk society as a feature of late modernity was first formulated in connection with environmental degradation in the 1980s by Ulrich Beck. This train of social theorising has gained in strength over the past decades and branched out into several different fields, including strategic studies.[219] The field of risk sociology now includes many of the most well-known sociologists such as

[218] This inquiry is thus very much in the vein of the work of the sociologist Ulrich Beck (1985) who in his book *Risikogesellchaft* explores the ways solutions to contemporary and past solutions to political, social and technological problems in themselves create risks which in some cases turn into threats.

[219] See for instance Rasmussen 2006

Anthony Giddens and Niklas Luhmann. What defines a risk as opposed to a threat is that it is a future unknown that could affect us negatively. A guiding idea is that modern society creates its own risks and vulnerabilities, for instance that industrial development created environmental degradation which in turn presents a risk to the former. Put more simply, a risk generated by an activity which in itself not harmful is a kind of boomerang effect. Once we become aware of risks, or preoccupied with them as in contemporary society, we begin to take measures to alleviate risks. However, attempts to do so may in turn create new risks of their own, a double-boomerang effect, as it were. In the words of Lupton 'risk meanings and strategies are attempts to tame uncertainty, but often have the paradoxical effect of increasing anxiety about risk through the intensity of their focus and concern'.[220] Adaptation to climate change can be taken as an instance of this process. The first part of this section pursues the inquiry in relation to adaptation on an international level and the second in relation to the domestic level. The second part also deals with psycho-social aspects of how societies tackle the effects of climate change itself, and not only mitigation or adaptation aspects.

4.1.2 Adaptation Strategies and International Conflict

Differences between countries in how they adopt a less fossil-intense form of capitalism and adapt to climate change could alter regional balances of power. Both kinds of adaptation could affect state strength, in the first case by ensuring energy security in relation to industrial production, transportation and the armed forces and in the second by making the country and its economy more resilient to droughts, floods and other climate change effects. It is important to note that changes in state strength matter to international politics under particular circumstances, for instance when a very hostile and precarious balance exists or when a country is surrounded by opportunistic neighbours. Barring such circumstances, the effects of relative differences may not be as important. This said, this report stresses that it is necessary to take the regional context into account when strengthening adaptation capacities, e.g. through development aid, so that inequalities in abilities to respond to climate change does not alter regional balances of power where these are tenuous and war-prone, thus exacerbating negative security dynamics.

Perhaps the clearest example of the generation of risk by attempts to avert risk in this context is militarisation of the issue of climate change in anticipation of 'climate conflicts' or more drastically still, 'climate wars'. An area in which such

[220] Lupton 1999:13, cited in Rasmussen 2006:40

discourses seem to have found fertile ground concerns the future exploitation of the Arctic, in which Canada and Russia are currently working to pre-empt future losses (or, actually the non-appearance of future gains) due to anticipated 'land grabs' by the other side. More worrying still, is the tendency of the media and analysts to willingly play into this process.

The opposing risks of generation of military risks through militarisation of climate change and the generation of climate risks through inaction and downplaying of the seriousness of climate change are the Scylla and Charybdis that politicians have to navigate through. As this report has tried to emphasise, even options that seek to alleviate the most deleterious risks in turn generate risks. Consequently, absolute security is and remains, unobtainable. Attempts to seek absolute security in fact may generate more risks than other options because their originators remain unaware of this possibility and in fact realise their aims by blinding themselves to the recursive nature of risk-generation.[221] In order to strengthen the awareness of such processes and to support decision-making, the conclusions compare different emissions scenarios on the basis of ascertaining the least risky but nevertheless not absolutely 'safe' option. In the words of Rasmussen:

> *In risk society the political process is about choosing which risk to act upon, which to ignore and how to deal with the new risks that arise as a consequence of your actions.*[222]

Domestic strategies of adaptation to climate change have got very tangible military-strategic implications through the question of energy efficiency. In many conceivable futures, civilian and military users of energy may well compete over dwindling resources. Therefore states that have managed to cut down on their civilian consumption (or make this more efficient) without damaging effects to public health, morale (with concurrent effects on state legitimacy), the economy etc, will experience significant advantages in the power-political/military field since they will have more energy resources to place at its disposal.

4.1.3 Adaptation strategies and domestic conflict

The more important aspects of social cohesion in relation to climate change are however more subtle. The ability to secure public acceptance of adaptation strategies will be a crucial factor in the success of their implementation and in

[221] Some of the problems with seeking absolute security are classically demonstrated by Kissinger 2000
[222] Rasmussen 2006:88

securing legitimacy for the government or, in extreme cases, of the state itself. This policy field is important because adaptation strategies inevitably entail large-scale and deep changes in lifestyle (or even life-cycle) patterns. Whether the public will accept and assist in the implementation of adaptation strategies hinges upon the degree to which it perceives itself to be deprived of material comforts and of psycho-social habitus. Wide-spread feelings of deprivation can bring feelings of inequity and resentment which can provide grounds for social tensions. It is important that the public accepts the necessity and justice of changes in personal lifestyles as well as in wider social patterns that mitigation and adaptation schemes entail. It is also important that such schemes are carried out in a way that is perceived to be equitable and fair and one that does not affect different segments of the population in widely different ways. The ability not only to convince their citizenry of the necessity of undergoing such changes and of the ways in which they are implemented but also to produce narratives that give meaning to these changes as positive and proactive rather than difficult to understand, forced and negative in terms of living conditions will be an important asset. Difficulties in convincing members of the organisation, or winning their "hearts and minds" as it were, are encountered in all cases of thorough reforms.[223] Large-scale social changes, particularly if they need to be consciously led by governments, would arguably encounter such problems as well.

Large-scale social changes bring about wide-spread feelings of social dislocation that sociologists call 'anomie'. This was an important aspect of the changes in mentalities, lifestyles and world-views that many people in Europe and America experienced around the turn of the last century in connection with the transition from agricultural to industrial societies. The founding fathers of the discipline of sociology, e.g. Émile Durkheim, Karl Marx, Ferdinand Tönnies and Max Weber, were very concerned with how to maintain, or create, social cohesion in the face of such fundamental upheavals. It is beyond the scope and capacity of this report to gauge the extent of social changes on macro-level (i.e. the organisation of society) as well as on micro-levels (i.e. individual lifestyles) that either early mitigation efforts, e.g. reducing greenhouse gas emissions by 30% by 2020[224], or later adaptation efforts will bring. The latter will probably entail larger changes although at a later date, perhaps beyond 2050, since societies will then face the waning of fossil fuels as well as more severe effects of climate change. Regardless of the extent of such changes, the question of securing political

[223] [224] This goal was agreed upon by the member states of the European Union at the summit in Brussels on May 2007. [Ref bbc.co.uk]

legitimacy for action and reform remains highly relevant, as do the questions of mental preparedness and equitable distribution of changes.

The problems of social cohesion and legitimacy will also be felt in countries that do not engage in policies of mitigation and adaptation, perhaps to a greater extent than in countries that are able and willing to raise the general level of preparedness. The problematic effects associated with climate change scenarios, which will become stronger as we proceed into the 21st century and which will vary with the level of stabilisation of the greenhouse gas emissions (i.e. as they differ between the IPCC scenarios) will challenge societies with respect to social cohesion and legitimacy of the political system. One way in which the legitimacy of political systems could be damaged is if the population perceives that they have been insufficiently warned and that previous generations of politicians should have taken more forceful action. Since it will not be possible to direct such feelings of betrayal will not be possible to direct at incumbent politicians they may instead be directed at the political system itself, e.g. representative democracy (e.g. in Europe) or secular government (e.g. in the Middle East). In other words, not acting now might endanger the future stability of many different political systems. As suggested above further challenges to the legitimacy of the government or indeed to the state itself might arise if climate change effects afflict different parts of the population very differently. Societies without major economic, ethnic, political or religious 'fault lines' between segments of the population can be expected to fare better than those marred by such fissures. We therefore conclude that the issue of equity (absolute, relative and perceived) in relation to the effects of mitigation adaptation to and impact of climate change is as important in the domestic sphere as it is in the international sphere.

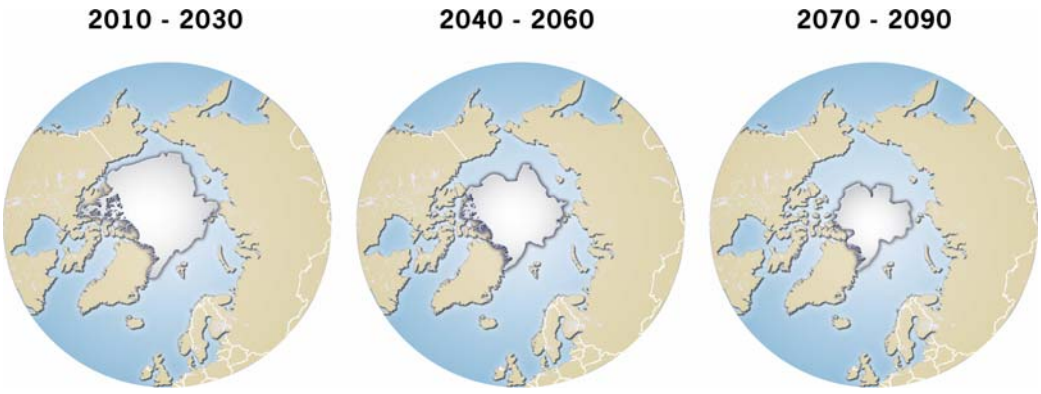
4.2 The Strategic Importance of the Arctic

4.2.1 Introduction

One of the most important theorists of geopolitics, Nicholas Spykman, argued in 1944 that, theoretically, air and sea lanes over the Arctic region could be highly significant. However, given the climatic conditions in the area, Spykman concluded that the northern maritime zone was unlikely to increase its relative importance.[225] Climate change may make this prediction obsolete. As has been made clear by several reports by the IPCC, the Polar Regions are likely to be one of the areas most strongly affected by climate change. Not only will changes in

[225] Spykman, Nicholas 1944:17

climate, primarily in terms of temperature, be most significant in these regions but the changes in the landscape that they entail will be most dramatic. As summer temperatures increase the ice caps will melt, primarily in the Arctic. Ice levels in Antarctica may not be as drastically affected due to increasing levels of precipitation. Even though the littoral areas of the Arctic sea will probably not become temperate areas suitable for large-scale human settlement within the time-span of the present study, climate change can substantially affect the geopolitics of the area.[226] This sub-section deals with three issues: the establishment of new sea lanes in Arctic waters, the possibilities of exploitation of natural resources on the seabed, and the thawing of permafrost in Polar Regions. Thus it aims at clarification of the issues at hand rather than at providing conclusive answers. Thereby further and more detailed studies may hopefully be generated. The image below illustrates the projected changes in ice-cover over the Arctic in the summer (June, July, August).[227]

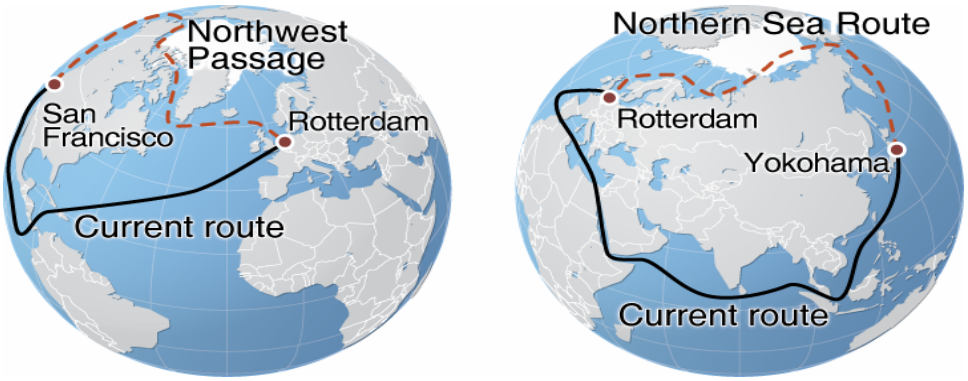


Sea lanes

Over the coming twenty to thirty years, new sea lanes might open due to the melting of Arctic ice, at least during the summer.[228] This possibility could be attractive for shipping between Europe and China but also between Europe and the American Pacific because the shorter distances compared with today's

[226] cf. Spykman 1944:18
[227] Source:www.grida.no
[228] Åtland 2003

shipping routes.[229] This is not in itself a cause for conflict, but it certainly represents a changed geopolitical condition. Shorter lines of transportation could entail decreased costs and therefore be beneficial to the economies of the Northern Hemisphere. The image below illustrates the possible sea routes under changed climate conditions[230]



The Convention of the Law of the Sea from 1982 divides the waters of the world into three principal categories: Internal waters, territorial sea and the high seas. We will here be concerned with the international legal issues involved with the latter two. Territorial waters are the body of water that is closest to the land of a coastal country. Although the extent of such territorial waters has seen many legal controversies over the years, states have largely respected a limit of twelve (nautical) miles.[231] Global warming and the melting of ice caps over the Arctic sea will probably not proceed at such a rapid pace so as to enable shipping that does not at some point or another cross the territorial waters of coastal countries. Therefore, we will now proceed to take a look at the legal circumstances involving the territorial waters.

[229] For example the sailing distance from Hamburg to Yokohama through the northeast passage is 6920 nautical miles whereas the same voyage through the Suez Canal is 11073 nautical miles long. Åtland 2003:38

[230] Naturally, the creation of new shipping lanes through the Arctic would entail substantial strain on the fragile ecosystems of the Arctic that would already be under stress from climate change. The image below is from http://www.unep.org/geo/geo%5Fice/images/full/5_routes.png

[231] Akehurst 1997:180 One international nautical mile is 1.852 metres Encyclopaedia Britannica (Micropaedia) Vol. VI p.886

The coastal state exercises sovereignty over its territorial waters, but it is circumscribed in one crucial respect, namely that foreign vessels have the right to "innocent passage" through the territorial waters.[232] The coastal state must not hinder innocent passage, although it can make the claim that passage is not innocent if it is 'prejudicial to the peace, good order or security of the coastal state.' Provided that the areas in question do not constitute 'straits which are used for international navigation between one part of the high seas and another part of the high seas' the coastal state may temporarily suspend innocent passage through its territorial waters.[233]

Clearly then, civilian shipping that traverses the territorial waters of Denmark, Canada and the United States (the Northwest passage) or those of Russia (the Northeast passage) will have the right of innocent passage.[234] Some countries have disputed the claim maintained by Western states that the right of innocent passage extends to warships but the legal grounds for disputing it remain doubtful. However, all countries with Arctic coasts, including Russia, have conceded the right of innocent passage to warships in their territorial waters.[235] Consequently, from a legal viewpoint there seems to be no need to consider shipping in Arctic waters from any other legal perspective than shipping in other parts of the world. However, Russia has claimed that the routes that pass through the island chains of its northern coast are internal waters, a point disputed by the United States.[236]

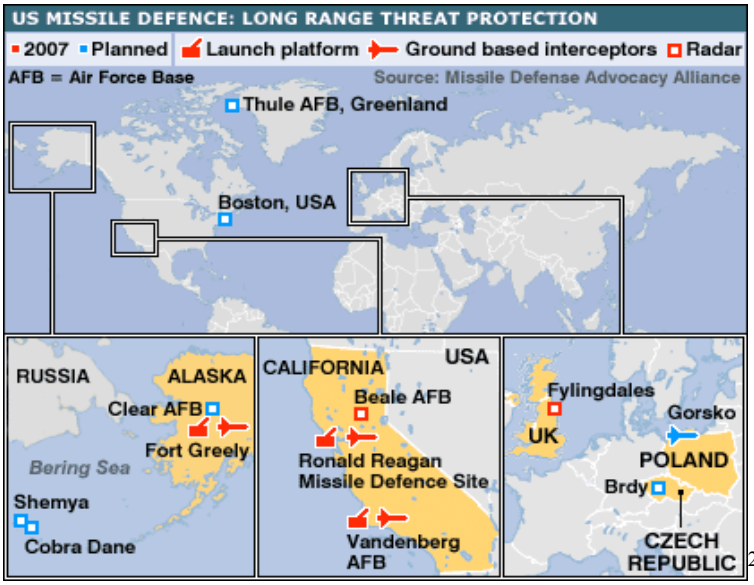
Contrary to the impression sometimes given in the media, many uncertainties remain as to whether and when sea lanes through Arctic waters will become profitable. It may still take time before the narrow seas in the Northern Canadian archipelago and around Severnaya Semlya (Russia) become navigable. Profitability is also hampered by the lack of cargo ships that are reinforced to withstand ice, high tariffs and insurance requirements. A simulation has shown that unless the tariffs are lowered by 26% the North-East passage will not be competitive in comparison with the Suez Canal.[237] Finally, given the extreme conditions that will probably be around for quite some time and assuming that all

[232] Akehurst 1997:176
[233] Akehurst 1997:177
[234] It should be noted that Canada has claimed these waters as internal, thereby possibly restricting the rights of passage, a claim that is not recognised by any other country. Paskal 2007:6
[235] In 1984 the USSR recognised that warships have the right to innocent passage and in 1989 it "amended its regulations to exclude arbitrary discriminatory restriction of the right of warships to innocent passage". Akehurst 1997:177. The Russian Federation is the successor state of the Soviet Union and has declared that it will continue to carry out obligations under international law concluded by the USSR. Akehurst 1997:166
[236] Åtland 2003:37
[237] Åtland 2003:38

the technology to master them is not available to any single country, ventures to exploit or traverse the Arctic may have to take the form of collaborations between several countries. This is even more evident in the case of exploitation of resources on the seabed where Norwegian firms and agencies have the technology and experience for offshore drilling for gas and oil in Arctic waters whereas Russia has a unique icebreaker fleet.

It has been argued that the reduced sea ice will also have implications for naval planning in the littoral countries, since new areas of potential operations become opened.[238] Although naval planners will have to rethink their areas of operations, it is unclear whether the polar climate will change so much that the littoral areas of the polar countries will be relevant for naval operations. The Arctic climate will have to change enormously in order for the littoral areas to be populated and for cities to be built. An important issue from the Russian viewpoint is that the large Siberian deposits of oil, gas, timber, coal and metals can be transported to export markets along the northern coast.[239] It is probably unrealistic to imagine a future relationship between Russia and the West where security concerns are not relevant, particularly considering current trends. However, one factor that could restrain a securitisation of the Arctic territories is if Russia were to perceive that its economic interests were likely to be damaged by doing so. One possibility of securitising Arctic shipping is if future sea routes pass nearby US and/or Russian bases in the Arctic. Concerning the former, future sea lanes are likely to be nearby bases for existing or proposed missile defence systems. This issue concerns not only the Thule airbase on Greenland but also existing bases in Alaska and proposed ones close to the Aleutian Islands in the Bering Sea.

[238] This is one of the few military impacts of climate change noted by the IPCC (2001b:831)
[239] Åtland 2003:38



[240]

If and when sea lanes open in the Arctic the Bering Sea will become a natural 'choke point' of Arctic shipping. Since its two littoral states are the United States and the Russian Federation, it could be argued that issues surrounding large quantities of international shipping through the strait could become a permissive cause for conflict. However, the opposing argument could be proposed that it would be in the interests of both countries to keep the Bering Strait open and under mutual control, which would provide an impetus towards establishing a regime of controlled management. For Russia, Arctic Sea lanes could be seen as a substantial opportunity for its Far East, not least for shipping contacts with the European part of the country. From this point of view, it may actually be beneficial that the two littoral states are strong and materially well-equipped to patrol the area. Although the issue is both hypothetical and indeterminate, it is nevertheless important to note that this point of contact between the US and Russia which could be of greater importance in the future is likely to play into the relations between the two countries.

4.2.2 Exploitation of the sea bed

Changed temperatures in the Arctic could entail new possibilities to extract natural resources, such as oil and gas from the Arctic seas and littoral areas. This development illustrates the contrast between the energy security perspective and

[240] Source: http://news.bbc.co.uk/2/hi/europe/6739685.stm access 20070611

a mitigation/adaptation perspective on climate change. From an energy security perspective, such a development is viewed as as an opportunity rather than as a problem. This development is more worrying from the perspective of mitigation of climate change. Access to previously untapped sources of fossil fuel will naturally make it more difficult to cut consumption of oil and gas, and thereby emissions of CO_2. From this perspective, the challenge is rather to make sure that the potential resources of oil are not exploited. The difference between these two perspectives on the Arctic could very well play into the global politics on climate change as different countries position themselves, either leaning towards an energy security perspective or towards a mitigation/adaptation perspective.

An outstanding question is whether the new possibilities of oil and gas extraction will lead to conflicts over resources.[241] This possibility is based on two assumptions:

1. Natural resources, such as oil, lead to conflict and the more valuable or scarcer the commodity, the more likely it is to lead to conflict.
2. Due to the hitherto unregulated status of the Arctic, this area is particularly prone to become an area of conflict. The Arctic has not been specifically regulated in any international treaty as has Antarctica, but as shown above, the Law of the Sea is applicable to several areas that may become political issues under future conditions of climate change. The Law covers not only what happens on the surface but also the seabed. For legal reasons, the Convention, previous treaties and customary law divide the seabed into two areas, the continental shelf and the deep sea.

Legislation concerning the continental shelf originated from the period after 1945 when exploitation of oil reserves under the sea became technologically possible. As stated by the 1958 Geneva Convention on the Continental Shelf 'a coastal state excersises sovereignty over the continental shelf for the purpose of exploring it and exploiting its natural resources[242].' The continental shelf is defined as an extension of the national territory of the coastal state extending to a maximum of 200 nautical miles from the baselines where territorial waters are measured.[243] Russia has made claims to substantial parts of the seabed under the

[241] CNA 2007:38
[242] Akehurst 1997:192
[243] Akehurst 1997:193 Article 76(1) of the 1982 Convention states that 'The continental shelf of a coastal State comprises the sea-bed and subsoil of the submarines areas that extend beyond its territorial sea throughout the natural prolongation of its land territory to the outer edge of the continental margin, or to a distance of 200 nautical miles from the baselines from which the breadth of the territorial sea is measured where the outer edge of the continental margin does not extend up to that distance.' Cited in Akehurst 1997:193

Arctic sea, claiming that the Lomosomov ridge, an underwater mountain range, is part of the Russian continental shelf.[244] The validity of these claims cannot be ascertained in detail here but they will be the object of dispute resolution by the International Commission on the Continental Shelf. A pertinent question in this context is whether Russia, and other countries with interests in the Arctic, will respect international law. An answer can only be tentative but it should be born in mind that even during the Cold war the USSR respected and worked within the framework of the Law of the Sea. Disputes can and will occur but as long as they take place within the international legal framework they do not amount to security 'conflicts'. A wholesale break with the legal framework that governs the Arctic waters by any party is unlikely to occur without a prolonged period of seriously raised tensions, as it would be seen as a very serious provocation to the international system.

Like other aspects of climate change, the effects of global warming in the Arctic depend on the international context of the region. Therefore it is relevant to take the changing political attitudes to human activity in the Arctic into account. A study from the Norwegian Defence Research Establishment (FFI) concludes that since the end of the Cold War, Russia's policy towards the North has become more dominated by economic interests while strategic concerns have become less important.[245] This change does not mean that tensions cannot and will not arise over natural resources in the Arctic in the near or more distant future. However, this report concurs with Åtland when he states that 'it is of great importance to the stability in the northern areas if eventual bilateral and multilateral conflicts over resources can be handled within a political/economic context or if they become 'securitised'.[246]

It is the position of this report that conflict is more likely to occur under scenarios of high use of fossil fuel and diminishing supplies, such as the scenario A1FI of the IPCC. Under a B1 scenario, when fossil fuel use is phased out in favour of other energy sources, this issue is not as problematic. However, conflict remains a function of the international context and of the relations between the potential antagonists involved. Therefore, it would be advisable to settle the boundaries of territorial waters in the North as soon as possible in order to minimise the risk of conflict over resources.[247]

[244] See http://news.bbc.co.uk/2/hi/in_depth/6925853.stm
[245] Åtland 2003
[246] Åtland 2003:49
[247] A country that wants to make a claim under the Law of the Sea must do so within ten years of ratifying it, which in Russia's case is in 2009. For Sweden this could mean having to chisel out an

4.2.3 Thawing Permafrost – an Issue of Strategic Concern

According to the IPCC, one of the most pronounced effects of climate change in the Arctic is the thawing of permafrost. Permafrost is soil that is perennially frozen and it is very common in the Arctic, making up 24.5% of the land mass.[248] As has been pointed out by numerous studies, thawing permafrost could act as a powerful independent driver of climate change. The permafrost traps vast amounts of carbon dioxide and methane, perhaps as much as 500 billion tonnes, the equivalent of 70% of the carbon currently in the atmosphere. Such a development would significantly speed up global warming and it might occur rapidly.[249]

Thawing permafrost might in the long run make parts of the Arctic more amenable to resource extraction, forestry or even settlement. In the short run, however, thawing might cause more problems. Thawing of ice-rich permafrost may undermine the stability of a wide range of man-made structures, including roads, buildings and pipelines in the area.[250] The problems with buildings are most pronounced in the Russian Federation, where most buildings in towns such as Tiksi and Yakutsk may be lost if no protective measures are taken.[251] Ensuring the stability of infrastructure for transport, roads, railroads, air strips, will be another problem, especially in Russia. The benefits that the Russian Federation could reap from a changed climate in the Arctic may be endangered or even undone by the transportation difficulties that could ensue in permafrost areas. Problems of infrastructure throughout Siberia may be exacerbated by the projected increases in levels of precipitation. The report issued by Working Group I of the IPCC in 2007 points to precipitation increases between 20 and 30% during winter months (DJF) and 5-10% during the summer months (JJA).[252] It should be noted that these increases are likely to be strongest in Northern Russia and Siberia east of Lake Baikal and that there is a large degree of agreement among the 21 models used.

EU position on the issue since the country is the EU presidency holder during the first half of 2009. See further The Economist 2007f:47

[248] IPCC 2001b:821

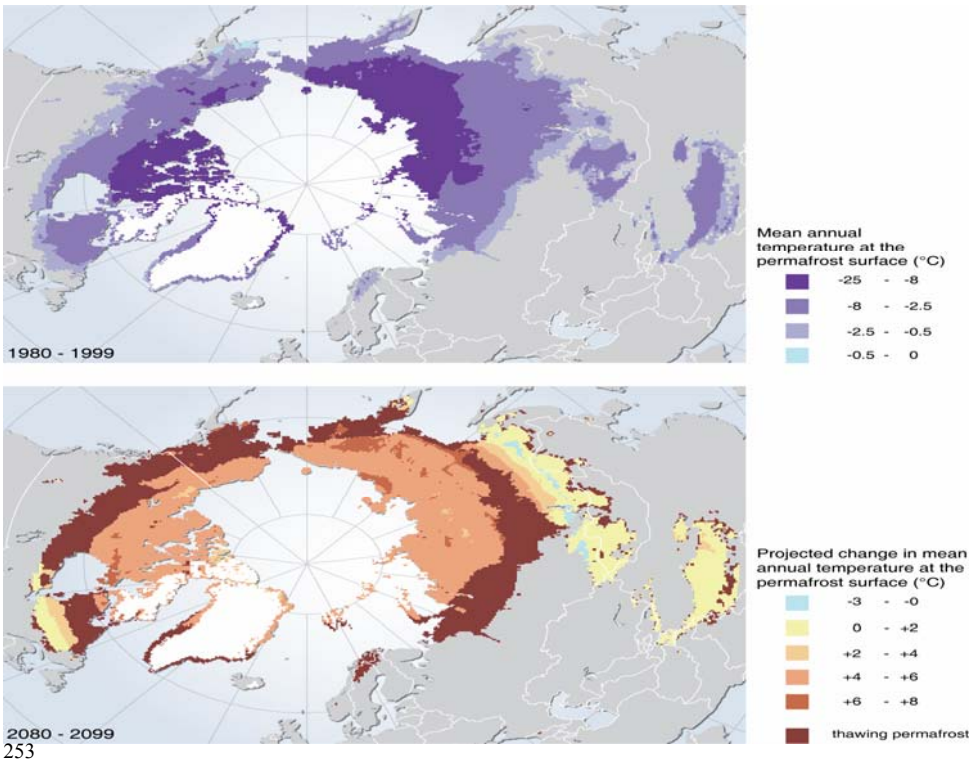
[249] Dupont & Pearman 2006:69

[250] IPCC 2001b:821

[251] IPCC 2001b:828

[252] Christiansen et. al. 2007:883

This development is not without military strategic implications, if transportation, primarily by rail or road, through Siberia becomes seriously hampered this will cause problems for Russian military planning. A particular issue of concern is whether the Trans-Siberian railroad might be threatened by the thawing permafrost. If transports become seriously hampered then the strategic possibility of moving troops between the Central Asian, European and Pacific theatres may be reduced. Although large-scale territorial warfare of the kind seen during the two world wars is unlikely in the near future, climate change may reduce Russia's possibilities of defence using the country's strategic depth. Developments in Russia of course depend on the Russian government's capacity and willingness to make necessary infrastructural investments. However, these investments will become more expensive the more global warming is allowed to progress. In a worst case scenario beyond 2100, adaptation through reinforced infrastructure could become difficult.



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[253] http://www.unep.org/geo/geo%5Fice/images/full/7_permafrostscenario.png

4.2.4 Conclusions

Like so many other issues associated with climate change, the question of whether the changes in the Arctic will lead to conflict or to cooperation is fundamentally indeterminate. As stated in the introduction, conflicts are the product human actions and cannot be 'caused' in a direct sense by natural phenomena. However, what is important is however that international regimes are in place that enable politics between nations in an 'opened' Arctic to take on peaceful and mutually regulated forms rather than the form of international competition and zero-sum logics of self-interested competition and, possibly, conflict. The above survey of the legal issues involved in the case of Arctic shipping and exploitation of the sea bed show that these issues can be regulated according to the Law of the Sea. From the viewpoint of international law, there are no reasons intrinsic to the Arctic why the issues at stake in the Arctic cannot be subject to peaceful resolution.[254]

This report argues throughout that the effects of climate change on international security are to a large extent a function of the overall international context. This proposition also applies to the Arctic but it stands clear that the changes that these regions will experience, particularly under conditions of strong climate change and in a long time-perspective, may fundamentally alter the geographical context of politics. Although geography is not deterministic, political relations can display a certain path-dependency over time. Since the natural changes to the Arctic might open up a new chapter in the relations between the littoral states the first phases of these changed relations could prove to be formative in the long run. Consequently, the actions taken by Canada, Denmark, Norway, Russia and the United States over the next few years could be very important indeed.

4.3 Climate Change, Refugees and Migrants

4.3.1 Introduction

Numerous reports and newspaper articles have contended that climate change will lead to a massive increase in the number of refugees around the world. This coverage has even given rise to a new term 'climate refugees'. This is a

[254] To claim as Paskal (2007:9) does, that '…there will be severe challenges to the global [sic] legal system' due to climate change is erroneous. Although Paskal rightly points out that a sea-level rise may give rise to a number of international legal issues, such as the determination of maritime boundaries, as long as these cases take place within the legal framework, the framework itself is hardly challenged. To claim otherwise is tantamount to claiming that civil law suits challenge a national legal system, while the opposite in fact is true.

suggestive and eerie concept that has entered the political vocabulary but has so far failed to make a mark in the legal discourse. Several aspects of the debate on climate change and refugees are in need of clarification. This section considers two main issues:

1. Will climate change lead to waves of refugees?
2. What will be the social and political effects of movements of people due to or under conditions of climate change? The inquiry is pursued with the same angle and interest as in the rest of the report, to ascertain how the conditions of international politics in general and security politics in particular are affected.

This section is proceeds in a way that allows us to investigate these very broad questions step by step.

1. We discuss the differences between refugees and migrants as well as general trends concerning migrations.
2. We consider previous research on environmental degradation and migration in order to identify similarities with the issue of our main concern.
3. We outline some plausible connections between climate change-induced migrations and violent conflict. Fourthly, we look at more indirect security consequences of migrations, namely destabilisation of states and societies.

4.3.2 Conceptual Issues

The first issue in need of clarification is what a refugee is. From the viewpoint of international law, a refugee is a person who

> *owing to well-founded fear of being persecuted for reasons of race, religion, nationality, membership of a particular social group or political opinion, is outside the country of his nationality and is unable, or owing to such fear, is unwilling to avail himself of the protection of that country; or who, not having a nationality and being outside the country of his former habitual residence as a result of such events, is unable or, owing to such fear, is unwilling to return to it.*[255]

A crucial aspect of this definition is that the person has had to cross an international border. Due to this fact the concept does not encompass all kinds of people who have been involuntarily displaced. Another category is 'Internally Displaced Person', or IDP. The accepted understanding of an IDP is a person

[255] Convention Relating to the Status of Refugees (28 July 1951) Article 1 http://www.unhchr.ch/html/menu3/b/o_c_ref.htm access 20071003

who has fled his or her own home but has not crossed 'an internationally recognized state border'.[256] The important concern from the purpose of this report are the relative proportions of these two groups. Are refugees more numerous than IDPs and in the case of refugees, where do refugees normally go? The great majority of people who are forced to flee, regardless of reason, stay in their countries of origin or to go adjacent countries whereas only a minority relocate further away.[257] According to the Norwegian Refugee Council, IDPs outnumber refuges by 2 to 1.[258] Hence, there are reasons to believe that migration in connection with the effects of climate change will probably be contained within national boundaries.[259]

A distinction needs to be made between refugees and IDPs on the one hand, whose movements are either temporary or permanent refugees and migrants on the other hand who relocate permanently but not under conditions of acute distress. To put these figures into proportion, the number of refugees worldwide can be compared with the number of migrants. According to the United Nations, in 2000 174.9 million people were classified as migrants, of which 110.3 lived in the developed world and 64.3 in the developing world.[260] In 2005, the number asylum seekers, refugees and internally displaced persons according to UNHCR statistics, was 15,50200.[261] In other words, although refugees and asylum seekers often catch the attention of the media, the public and the politicians, they are only a minority of much larger population flows, which are 'of a mixed, composite character'.[262]

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[256] The full definition reads in the *Guiding Principles on Internal Displacement* reads: "Persons or groups of persons who have been forced or obliged to flee or to leave their homes or places of habitual residence, in particular as a result of or in order to avoid the effects of armed conflict, situations of generalized violence, violations of human rights or natural or human-made disasters, and who have not crossed an internationally recognized State border". UNHCR 1998 Cited in Mooney 2005 See also Woehlcke 1992:287-88

[257] This is supported by statistics on major refugee arrivals (2004) as well as the correspondence between countries of origin and main countries of asylum (2005) in UNHCR 2007:15 & 16 respectively. For example, out of the 146,540 people fleeing Sudan, 130,000 arrived in Chad, 14,000 in Uganda and only 240 in "other" countries UNHCR 2007:15 In the case of refugees from Afghanistan, 960,000 lived in camps in Pakistan and 953,000 in the Islamic Republic of Iran, whereas only 23,000 had been granted asylum in the United Kingdom. An additional 1.9 million Afghans living in urban areas in Pakistan 'some of whom may be refugees' must be added to the figure of those living in camps. UNHCR 2007:16

[258] Internal Displacement Monitoring Centre 2007

[259] WBGU 2007b:127, 137

[260] UNHCR 2007:12 It should be noted that these statistics do not give the entire picture as they exclude IDPs that are not assisted by UNHCR as well as the "incalculable numbers of 'self-settled' refugees world wide". UNHCR 2007:22-24

[261] UNHCR 2007:10

[262] UNHCR 2007:24

A final note concerns the question of who migrates. It is well-known in refugee research that different kinds of people have different migratory potential. Factors such as age, education, the degree of traumatisation after a natural disaster, the individual's own perception of his or her potential to change his or her circumstances and an experience of migration as a strategy, either personal or within the family are very important.[263] This is not a question that can be elaborated at length in this report, but migration may have considerable effects on demographic structures in both sender and receiving countries. If young, able-bodies and/or well-educated males rather than entire families migrate then demographic imbalances could result, which in turn could have negative consequences for development.

4.3.3 Do Environmental Degradation and Climate Change Cause Migrations?

There is a nascent debate concerning the connection between climate change and international large-scale migratory movements of internally displaced persons (IDPs) and refugees.[264] Previous research is divided on a number of accounts:

1. Are there any 'real' climate refugees or is the concept a misnomer?
2. Do changes in global or regional climates lead to large movements of refugees or not?
3. If movements of migrants and refugees will occur, will they be directed towards the developed countries of the North or not?

Several previous estimates that have been made argue that a result of climate change, including sea level rises, there may be very large numbers of refugees. Norman Myers, the most well-known proponent of this thesis, puts the number of people at risk due to sea level rise and "other climate dislocations" at 212 million.[265] Richard Black has criticised the notion of environmental refugees as well as the high figures provided by Myers.[266] Interesting details include findings that migration may actually decrease rather than increase during droughts.[267] The reason is that migration requires monetary resources for travel and 'an economic downturn reduces the ability of families to make such an investment'.[268] Black also criticises Myers' argument that up to 200 million people may be forced to

[263] WBGU 2007b:127
[264] For an overview see Castles 2002
[265] See Myers 2001 See also Myers 1993 and Woehlcke 1992
[266] See Black 1998 & 2001 For an analysis contrasting Myers and Black, see Castles 2002:1-2
[267] Black 2001:7, citing Findley 1994
[268] Black 2001:7

flee or migrate due to rising sea levels. The figures were originally calculations of populations at risk due to floods and sea level rise but, as Black points out, there is a large step from being at risk to choosing migration as a strategy. Such figures should be treated with caution and are probably best viewed as possible effects unless other adaptive measures are undertaken rather than as deterministic predictions.

It is beyond the scope of this report to make a thorough analysis or evaluation of these calculations or their probability but it is important to stress that previous research on movements of refugees and migrations suggests that migratory movements are geographically restricted. Future refugees and migrants will thus probably end up in camps in their country of origin or in neighbouring countries. This probably applies to permanent migration due to changed climates as well as to temporary movements of people due to natural hazards, e.g. storms or floods. The act of fleeing from natural disasters is sometimes difficult to distinguish from the decision to migrate in order to adapt to new circumstances.[269] We can analytically distinguish between the two phenomena by defining the first as rapid flight from sudden events, e.g. extreme weather events, and the other as a more planned long-term solution to a gradual decline.

Recently, there have been many debates on illegal immigration to Europe, a phenomenon largely unconnected to climate change. The massive influx of immigrants from Africa and Asia feared by many observers has not materialised and the numbers of immigrants that arrive detected or undetected in Europe is a small minority of the world's migrants. However, as we have seen over the last couple of years, even small numbers can produce a large political impact.[270] We can thereby conclude that quantitative changes in a certain variable due to climate change are not proportionate to the qualitative political consequences. We should, however, bear in mind the importance of the state in regulating refugee flows, particularly in the North where states have the capacity to turn away or resettle refugees.[271] Of course, this does not mean that the problem goes away but only that refugees shift category and instead become IDPs. Thereby economic, political and social effects – such as impoverishment, destabilisation and possibly collective mobilization with political intentions – take place in their country of origin.

[269] UNHCR 2007:28
[270] WBGU 2007b:125, 127
[271] See UNHCR 2007:16-17

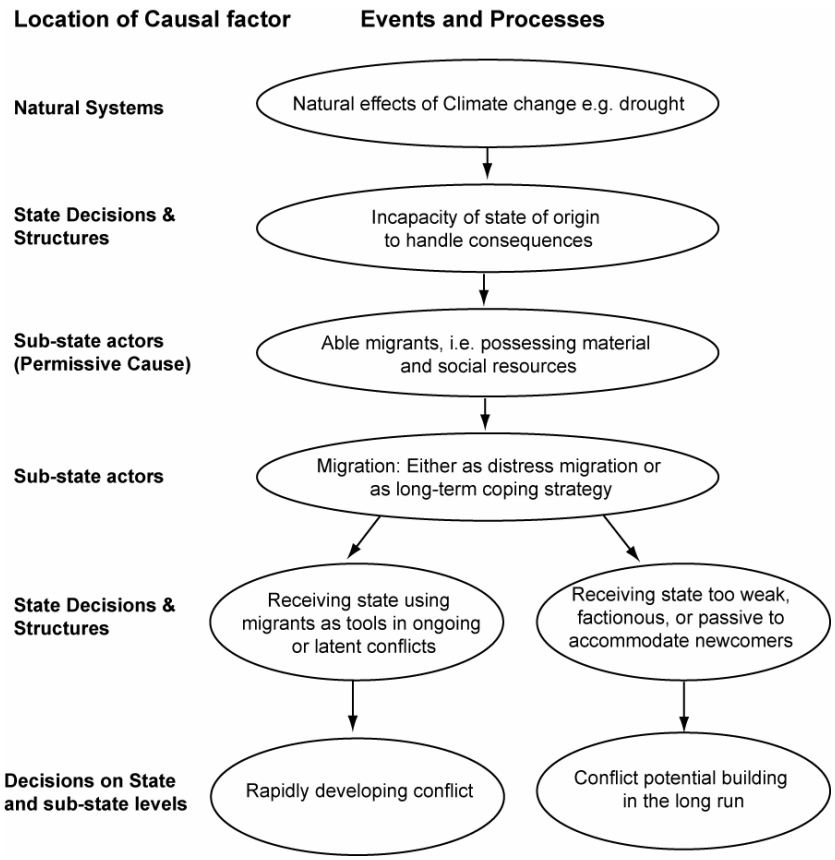
4.3.4 Do Migrants and Refugees Cause or Contribute to Conflict?

As stated in the introduction, a general stand-point of this report is that conflicts do not occur 'automatically' but they are the product of human action although constrained as well as enabled by socially constructed structures. Thomas Homer-Dixon has argued that there is 'substantial evidence to support the hypothesis that environmental scarcity causes large population movement[s], which in turn causes group identity conflicts'.[272] The literature on environmental conflicts, with or without migration as an important component has been criticised as being theoretically rather than empirically driven.[273] Astri Suhrke argues that there is little empirical support for neither the notion that people are forced to move because of environmental factors or the argument that refugees lead to conflicts.[274] However, there have been cases where these factors have been present at the same time and we cannot exclude the possibility that there will not be future cases where they will do so. In order to understand the mechanisms of their connections, we need to take a number of intervening variables into account.

Certain accounts stress that the state has played a key role in all cases where migrations have led to violent conflict. The actions of both the 'sending' and the 'receiving' state are very important in this respect. In several of the cases that are most often cited as instances of the connection between environmental degradation, migration and conflict the state has been an active player in fostering these connections. A common denominator in cases of violence in connection with migrations, e.g. in the Chittagong Hill Tracts (Bangladesh) in the 1980s, the Senegal River Valley (Mali & Mauritania) in 1989-90 and in Assam (India) in the 1980s, is that the state empowered the migrants against other social groups, thus fuelling conflict instead of fostering accommodation.[275] In many cases, migrants were used to play into the ethnic or economic policies of the state regimes. Thereby, migrants are made into proxies to serve the purposes of the state or the ensuing conflict reflects the fractured and corrupt nature of the state apparatus. A conclusion, hence, is that although the proximate cause of the conflict was the migrations, the permissive cause – without which conflict would not have occurred – can be sought in the intentions or incapacity of the state. Therefore we can conclude that given the problematic nature of many states, particularly those with weak accountability and human rights record, conflict

[272] Homer-Dixon 1994:20-23
[273] Barnett 2003:10
[274] Suhrke 1997:257
[275] Suhrke 1997:264-269

may arise in connection with migrations in the future. However, neither analytical primacy in explaining conflict nor political responsibility in dealing with it lies with migrants, much less with the climate. The figure below summarises the different steps of the argument and illustrates the intertwining of natural and social systems as well as the key role played by the state at different junctures.



Having surveyed the historical record of environmental factors and migration and of migration and conflict, we will now outline some possible future developments. Above, we pointed out that migrants can be used by politicians as scapegoats in order to bolster their own power. Conversely, migrants could be used as a power-resource in struggles in the receiving country. These two developments, particularly the latter one, are probably more likely in the case of

migrants than in the case of refugees. Refugees tend to be substantially weakened and deprived of resources as well as marginalised in their country of origin. Therefore since they lack capacities and as a power-base, they are neither attractive allies nor well-organised threats to the receiving country, but rather victims.[276] The status of refugees as victims rather than as threats is highlighted by the fact that both refugees in rural camps and 'self-settled' refugees and IDPs living in urban areas are highly vulnerable to the effects of climate change.[277] They are primarily vulnerable to extreme weather events, such as flooding or storms, but they are also more exposed to the hardships of a worsened climate due to their marginalised status.

In this respect, groups of migrants or refugees would follow the pattern indicated by our arguments about interaction capacity. Organisations from the state down to the family group that have been severely affected by the effects of climate change are likely to experience a loss in interaction capacity and in the ability to mobilise for collective action. Hence, well-organised violence by strong groups pursuing political, economical or ideological aims seems less likely than decline, destabilisation and a reverse in development. Before exploring the pathways to and consequences of this development, we will look at exceptional cases, where climate change might reinforce existing political conflicts that involve migrants.

We face a different situation if the migrations are preceded by violent conflicts in the country of origin, i.e. the 'sender' country. In that case, migrants may mobilise and continue the conflict from the country to which they have fled, either politically or militarily. If they do so, relations between the sending and receiving country may be affected for the worse. If an insurgency in the sending country is conducted from bases in the receiving country is conducted, the government of the former might use violence to (re)establish its monopoly of violence, in effect having to fight a counter-insurgency in its own land. Failing to do so might lead to cross-border fighting, increased tensions (e.g. between Syria and Turkey over PKK bases) or, in the worst case, a full-blown invasion by the sending country. All these developments are possible in various parts of the world and certainly problematic from the viewpoint of security and stability. However, they are not of particular relevance to climate change-induced migrations, although we could however postulate several developments where the natural effects of climate change (droughts, floods etc.) reinforce existing patterns of conflict.

[276] Suhrke 1997:263; Lee 1997:289
[277] UNHCR 2007:28

For instance, existing civil strife or insurgencies, which could be exacerbated by climate-change induced pressures could work in tandem with the necessity to migrate due to climate change effects. Another plausible development is that a country weakened by climate change could find itself receiving refugees from political conflicts, who arrive with the kind of grievances described above. In this case, the receiving country might find itself unable to control its territory by enforcing order and/or to accommodate the newcomers in a fashion that stabilises the situation.

Having considered these hypothetical cases where climate change may reinforce pre-existing conflicts involving cross-border migrations we now consider the issue of overburdening or destabilisation due to climate change-induced migrations. Recalling the arguments concerning causation in Section 1, we stress that destabilisation of societies due to refugee flows may be permissive, not proximate, causes of conflict.

4.3.5 Migration, Slums, Destabilisation and Conflict

In large parts of the world large movements of migrants are already taking place, primarily in the form of internal urbanisation. [278] In connection with the above arguments on migrations, including rapid forms, it seems reasonable to assume that migrations induced by climate change will take this form. Cities that are relatively close to affected areas are likely to constitute destinations for migrants seeking to evade worsened climatic conditions, floods or sea level rise. From the perspective of how such developments affect the stability of societies and states it must be emphasised that urbanisation in large parts of the South assume the form of spreading of slums.[279] This phenomenon decreases the possibilities of a sustainable economic development in the countries concerned and may have destabilising effects.

In some cases slow decline may be a more probable outcome than the rapid collapses and conflicts that sometimes capture the popular imagination. However, economic and societal decline and increase of ‘slumification’ can constitute a breeding-ground for conflict, terrorism, low-intensity urban conflicts and organised and spontaneous crime but also for insurgencies within countries and regions. Destabilisation can occur in certain areas but in order to grasp this phenomenon in full poverty and institutional weakness must be included in the

[278] Davis 2006 Se also The Economist 2007a:5-8 The IPCC points out that urban areas in the South are particularly vulnerable to the effects of climate change IPCC 2007b:7
[279] See The Economist 2007a:6

analysis rather than seeing climate change as a triggering cause of conflicts that are interpreted one-dimensionally as ‘ethnic’ or ‘religious’.

Furthermore, planned migration, of the kind already taking place on Tuvalu, could become an important strategy of adaptation in larger countries. Such a course of action would entail a strategy of withdrawal of population from an area that could be afflicted by temporary or permanent floods or droughts. Such solutions should be considered closely and subject to careful strategic planning in order to reduce costs, suffering and risk of instability in the future. Such measures demand political will and financial resources, but also considerable institutional and bureaucratic capacity to finance and organise the efforts. This could become a major foreign aid task in the future.

The debate on environmental and climate refugees is highly polarised and some of the polarisation may be traced to the preconceptions and paradigms of the participants. The two camps in the current debate are, on one side, authors who stress that environmental refugees pose a substantial problem and warn of coming mass migrations due to climate change. On the other side are find authors who criticise the statistics, and the lack of ability to demonstrate causal links in the first camp and who also stress that migration is often a purposeful strategy of peoples living in areas affected by seasonal climactic variations. In many ways, this debate is similar to that waged by politicians, scholars and lobbyists over the nature of slums.[280] There are those who stress the poverty, degradation and hardships experienced by slum-dwellers. These authors also tend to warn of the risks of social and political repercussions of the widespread slum sprawls and tend to project dire consequences in the future if nothing is done. On the other side there are those who challenge the arguments on the pathologies of third world mega-cities. Suhrke argues that the reasons given by Samuel Huntington in the 1960s as to why there is such a low level of collective urban violence in large urban conglomerations are still relevant.

Urban centres represent upward mobility for the migrants (which is why they continue to come), and the migrants tend to be cautious and conservative, focusing more on immediate ways to improve their livelihood than on broader political struggles.[281]

The conclusion that urban slums in the South have witnessed very little large-scale collective violence should not be understood as a downplaying of the many problems that slums entail. Rather, it only shows that organised violence, which is the focus of traditional security, is rare. Shifting the perspective one must

[280] See Davis 2006
[281] Suhrke 1997:258 See also Huntington 1968

argue that many aspects of slums are highly detrimental, to say the least, to human health, security and development. Much in line with the conclusions that we were able to draw in the section on climate change in Africa, rapid migration to mega-cities in the South is or can be a hindrance to development rather than a direct security threat. It is beyond the scope and purpose of this report to enter into the debate on the connection between development and security issues or even into the debate on whether development should be linked to security issues.

In the debate on forced migration and slums, the two positions can be understood by drawing out the essence of their respective perspectives and assumptions. In the less alarmist camps of the respective debates, authors share an optimistic view of politics, technology and economics and they emphasise the resourcefulness and the agency of the people who are the objects of the debates. Although this stance avoids victimisation, there are a number of assumptions that underpin its arguments which may be untenable. Concerning the argument of adaptive strategies, optimism may be unwarranted since all human beings adapt in one way another and adaptation itself is no guarantee that the course of action is not socially destabilising, that it leads to a dignified existence or indeed not to conflict. However, we concur that it is highly important to take account of local practices, such as seasonal migration, into account and not to project 'Western' social practices and norms onto other contexts and thereby misconstrue the subject matter.

Consequently, two caveats are in order in relation to the development-destabilisation nexus. First, climatic and thereby environmental conditions have been relatively stable in most parts of the world for the past centuries and the changes in natural systems and concomitant social practices we are seeing today may be only the first inklings of what can be expected in the more extreme scenarios developed by the IPCC. Many natural systems are today viable and can sustain a large number of people, but they are under considerable stress. The empirically provable fact that environmental problems may not be acute today tells us little about the future and should not be grounds for policies aiming at handling tomorrow's problems.[282] What this amounts to is that, in the words of

[282] An analogy could be drawn to the optimism in the inter-war years of the previous century where the fact that Germany was no threat at the time (e.g. in the 1920s) led politicians to infer that the current situation would hold for the future. Certainly, some cut-backs in military spending from the levels during or even immediately previous to the war would have been necessary and sensible. A certain downscaling of military posturing and 'desecuritisation' (Buzan, Wæver & de Wilde 1997) of international relations was also prudent then since it reduced the risk of war by signalling peaceful intentions. The same logical is applicable to the contemporary question of whether to 'securitise' climate change and environmental degradation. The probability of conflict can be increased if some actors signal a readiness for it. Nevertheless, the improbability or even impossibility of future conflict or tensions cannot be deduced from a present state of peace or

the German historian Reinhardt Koselleck, history may have ceased to be a guide to the future in this respect, which has happened on previous occasions of substantial historical discontinuities.[283]

Second, a great diversity of natural forms can be found within the same system but a precondition of highly specialised species is that they can interact with other, different species within the same system. A similar relationship holds for social ecologies in which nomadic communities may exist or even thrive. However, a precondition of their highly specialised niche – often living in harsh regions – is that they can interact with other kinds of communities, namely settled ones, in the same system. Just like in natural systems, subsistence is a matter of relations. If conditions change in such a way that settled communities no longer need the goods or services of the nomads, or if migratory patterns change or settled communities come under stress so that they cannot absorb the influx of nomads, then the nomadic communities may no longer be viable.

Therefore, although scholars in the 'less-alarmist' camp may be right in criticising some of the empirical evidence of environmental refugees their critique should not, given the potential risks involved with climate change, lead us to infer optimistic visions of the future. Our point is rather that in this case we should be aware that past evidence may not be a useful guide to the future. Given the risks of climate change and given that we can now begin to understand the limits of our knowledge, we strongly argue in favour of thinking and acting on the basis of precaution and pragmatism.

4.3.6 Conclusions

Finally, the following three conclusions can be drawn from this section:

1. The state plays a central role in whether conflict will result in connection with migrations. As befitting a very complex organism, the relationship of the state apparatus to phenomena that originate on sub-state levels is

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sustainability. Rather, both extremes should be avoided and replaced by a simultaneous awareness of the risks of a future worsening of political relations, in individual regions as well as globally, and of the fact that conflicts can be avoided and their causes mitigated, not least because their character depends on human volition and interaction and is not automatic.

[283] See Koselleck 2004

multifaceted. The state needs to be interested in and able to address social grievances and needs politically before local leaders resort to violence or tensions erupt in less-coordinated but nevertheless violent actions, e.g. protestors turn into mobs. If violence does occur, either as a result of conditions in the receiving country or as a result of previous processes in the sending country, the state needs to have the will and capacity to assert control over the territory. It needs to be pointed out that, as in all cases where the state apparatus meet non-state actors with violence, a careful combination of steadfastness and restraint is necessary so as to quell rather than escalate the conflict. Finally, if the state apparatus or parts of it, e.g. the security services, decide to exploit for their own ends an influx of migrants, regardless of whether these have crossed an international border or not, e.g. by supporting one group against another, then the likelihood of violence increases.

2. 'Degradation', whether environmental or social, does not lead deterministically to violence and conflict but can be handled through adaptation/accommodation. Increasing economic and social problems can be handled by means of developmental and/or economic policies in the first instance. The issues of migrations and social degradation relate back to the problem of whether the many problems we are addressing should be conceived of as questions for security policies or whether other policy fields are more suitable in addressing them. At root, the problem can be addressed in terms of the overarching effects that one wants to achieve. If containment is the overarching aim, then military instruments might be sufficient. However, if the long-term 'strategic' aims are international stability and development then issues of environmental and social development should be addressed by policies seeking to amend the root cause of the problems. In that respect, military instruments can be a means to an end if employed carefully and not in isolation but in combination with other means.

4.4 International Interventions in a World with a Changed Climate

International interventions along the spectrum from peace-keeping to peace-enforcement may very well become even more important in a world characterised by climate change than it is today. Two arguments support this assumption:

1. International intervention is becoming an important modus operandi of international politics –although not the only one– which may have the character of determining policy.
2. As this report and others have argued, although inter-state wars due to climate change are unlikely, destabilisation of countries or indeed entire regions due to climate change is not.[284] Therefore, international operations conducted either with the intention of stabilising regions or to ameliorate conditions in regions already 'failing' are likely to become important in the future. Such operations are not purely military matters but the challenges at hand call for an intensive collaboration between civilian and military instruments since the missions include various foreign aid tasks, institution-building and the provision of physical security. In other words, it could be argued that many states and international bodies (e.g. NATO and the EU), particularly in the North, are already preparing for tasks that they may have to undertake in a world characterised by climate change.[285] This report argues that strengthening of this development and of reinforcement of structures that enhance cooperation and co-ordination between civilian and military instruments is a sound strategy for the future.[286] However, the complexities as well as magnitudes of climate change mean that a number of factors hitherto unacknowledged in political and academic debates must be taken into account.

Much of the debate around 'state failure' and international efforts to prevent or to rectify such situations has focused on states and societies that already are weak or weakened. This is a particularly prevalent mode of thought in debates on 'early warning systems' monitoring state failure.[287] Without denying the

[284] WBGU 2007b:2

[285] The task of addressing state failure is prominent in the security strategy of the EU. See EU 2003:4 & 6. The task is less-prevalent in NATO's strategic concept from 1999 but is nevertheless counted among the 'security challenges and risks' the Alliance has to take into account. See NATO 1999 §20. The importance of countering instability due to 'failed or failing states' was re-affirmed in at the Riga summit in November 2006. See NATO 2006 §2 (The Strategic Context) and §16.i (Guidelines for Alliance Capability Requirements): In §16.i the Alliance stared that it puts a premium on 'the ability to bring military support to stabilisation operations and reconstruction efforts across all phases of a crisis, including to establish a safe and secure environment, within the full range of missions; military support to reconstruction efforts will be provided to the extent to which conditions in the theatre of operations prevent other actors with primary responsibilities in this field from carrying out their tasks. This should embrace the ability to support security sector reform, including demobilisation, disarmament and reintegration, and to bring military support, within available means and capabilities, to humanitarian relief operations'

[286] Such collaboration is also envisioned in EU 2003:7 & 12

[287] For this argument in the context of climate change see for instance Purvis and Busby 2004:71 & 72

importance of closely watching states that now display signs of weakness or instability, this report argues for a preventive strategy that pays particular attention to relatively strong states in the respective regions.[288] This order of priority is advocated for three separate but interrelated reasons.

1. The difficulties of intervening in large, populous and/or well-equipped countries.
2. The positive role that a strong regional power can play for its region under conditions of climate stress.
3. The destabilisation or even collapse of a large, populous and/or well-equipped country may have negative effects on other countries in the region. Although notions of an automatic 'spill-over' are somewhat suspect, many other problems may ensue.[289] These could be refugee flows or even the temptation of neighbours to step in to exploit the situation, such as several states did when the Mobuto regime fell in Zaire in 1998.[290] Naturally, the general international political context in which international interventions will take place must be taken into account. Since this involves much wider issues, it is discussed below in section 5 under the heading 'the context of climate change'.

4.4.1 The Difficulties of Intervention

When discussing international interventions to support countries threatened by destabilisation or internal conflicts it must be stressed that most interventions have taken place either in small countries with few resources (e.g. Sierra Leone, Liberia) or on a small scale in larger countries (e.g. the EU operation *Athena* in Congo). This report emphasises that some of the countries threatened by serious destabilisation due to climate change are large, populous and contain substantial resources. International intervention in such countries would pose challenges of an entirely different nature and magnitude. The factors of geographical and demographical scale are obviously problematic but so too are the resources present in a larger and richer country that has become destabilised by climate change – particularly military resources that were once under the control of central authorities such as the army and police forces but under a scenario of destabilisation may have slipped into the control of various other actors.

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[288] This idea builds partly upon Esty 1999: 298-299 See also Stedman's (1996:237) advocacy of focusing foreign aid resources in countries that stand a chance of sustainable development; a view well-in tune with the argument of this report.
[289] Brown 1996:583
[290] Howe 1996

Such factors make international interventions into large, populous and once resource-rich countries far more daunting than into smaller countries. They may in fact over-stretch the resources and capabilities of intervening states, which would most probably be from the North (e.g. NATO and EU).[291] Interventions into major countries may turn out more like the current operations of manifold difficulties and dubious prospects of success such as that in Iraq rather than the relative success stories of Liberia, Sierra Leone and to a certain extent, Kosovo/Kosova. Since international interventions with the purpose of rectifying a situation in which a large state has become destabilised or even fallen into disarray may not be realistic, preventive strategies become even more important.

4.4.2 The Stabilising Potential of Regional Powers

Because of their relative strength, it can reasonably be assumed that the importance of regional powers and other major states to the region is so much greater. Countries that are important to entire regions – either economic regions or regional security complexes – may have the ability to substantially strengthen or weaken the region, depending on internal developments. For this reason supporting of state and societal stability, a task that requires development of institutions and administrative functions, by regional powers can be a forceful preventive measure. To enhance social cohesion, which is obviously a core asset under conditions of stress as may follow on climate change, it is also necessary that not only the state apparatus is strengthened but also the institutions of civil society.

Regional powers have the possibility of intervening in crisis situations because of their greater proximity to areas severely affected by climate change and the additional social consequences that this may bring. Bolstering the capabilities of individual regional powers with the intention that they should play a leading role in crisis management could entail problems such as affecting regional security dynamics for the worse. Therefore regional multilateral security organisations ought to be strengthened.[292]

Because of the relative affluence of their societies and strength of their economies it can also be assumed that major states could be attractive destinations for large-scale migrations which may have destabilising

[291] WBGU 2007a:6

[292] For a discussion on how the European Union could contribute to regional stability in West Africa by supporting ECOWAS (Economic Community of West African States), although not in a climate change related context see Nivet 2006 For a similar analysis concerning the role of the EU and its member states in strengthening multilateral security arrangements in sub-Saharan Africa see Faria 2004:11-30 However, for critique of ECOWAS see Stedman 1996:250-53

consequences if such migrations are not managed in a planned and orderly way. Therefore, the capacities of receiving and integrating migrants and/or refugees must be strengthened as a preventive measure as well as a part of future crisis operations.

4.4.3 Negative Consequences of Destabilisation of Regional Powers

Although regional powers in the South may be powerful, rich and stable by regional standards, it must not be forgotten that their institutions are frail, their societies fractured and that governance faces substantial challenges now and in the future. Therefore, they may well become destabilised although in perhaps more surreptitious and subtle ways than their weaker neighbours. Many of the states considered by Buzan & Wæver as regional powers, such as Egypt, South Africa and Nigeria are also susceptible to being affected quite severely, although in different ways, by climate change.[293] Needless to say, their capacities to adapt to climate change ought to be a focal point of institutional foreign aid operations.

Cross-border consequences of the destabilisation of a regional power may include economic collapse in neighbouring countries, the proliferation of arms and armed groups and the lack of leadership and stabilising influence in a region afflicted by climate change and other related calamities.[294] The regional role and the difficulties associated with international intervention in larger countries also make preventive efforts such as technical and institutional aid to enhance their adaptation capacity much more important. In fact, this report recommends that efforts be focused on countries the destabilisation of which would be much harder to rectify and would likely to have consequences beyond its borders.

In sum, several major countries may be considered ‘pivotal’ in the sense that what happens to them will affect the entire region, for better or for worse. In this regard, however, this report wants to stress two things. One, ‘pivotal’ status does not only hinge on material factors or on quantifiable and measurable capabilities. Rather, the relative importance of a country is due to political factors. Two, the role of a ‘pivot’ is not necessarily played only by today’s regional powers, although they are clearly important. Instead, much more careful analysis must be undertaken; a task this report has to pass on to further research. The following is

[293] For example, Nigeria’s petrochemical industry is threatened by sea level rise as it is located near the coast and in low-lying deltas. Chatham House 2005:28

[294] The economic importance of strong states as motors of regional development should not be forgotten in this context. Stedman’s (1996:264) dire warning is also worth quoting in this respect: ‘Peace enforcement and humanitarian intervention, by drawing resources from African countries that have the potential to be self-sustaining, risk condemning all of Africa to collapse’.

not a definite check-list but a suggestion of factors that would imply a 'pivotal' role for a country:

1. The likelihood of a country to become severely destabilised by climate change as well as by other challenges such as population growth, institutional frailty and societal fissures.
2. The country neighbours or is close to areas affected by climate change.
3. The consequences of destabilisation would be felt across the entire region of which the country is a part.
4. The country is susceptible to material and institutional aid and is, in turn, able to assist in sustaining its region through foreign aid, political leadership and material resources.
5. Not only must particular attention be paid to large and populous countries but also to countries with substantial and or combat-hardened armed forces or militias and large stocks of weapons. They may be as difficult to intervene in as large countries and the regional effects of their collapse could be as serious in terms of effects on neighbouring countries.

4.5 The World Economy and Resource Wars

It is not possible or necessary to deal in full with the impacts of climate change on the global and regional economic systems in this report. It is not possible due to the limitations in scope and not necessary since this has been outlined in detail elsewhere, particularly in the Stern Review. However, it would be erroneous not to discuss the economic consequences in a report dealing with the impacts of climate change on international security since the spheres of politics and economy are so intimately connected. The Stern Review has argued that the economic costs of *not* mitigating climate change '…could create risks of major disruption to economic and social activity, on a scale similar to those associated with the great wars and the economic depression of the first half of the 20th century'.

Above, one of the important permissive cause of states undertaking resource conflicts identified is an increased role of the state in managing national economies. Economically interventionist states or those with significant linkages between business/industrial elites and security policy elites are far more likely to take military measures to ensure access to raw materials or markets. On the contrary in countries (or under a global paradigm) where market actors are left more to fend for themselves and where the connections between state-economy-welfare are becoming more detached, there is less risk of a securitisation of the

economy with military implications. To argue that the post-Cold War state ascribes increased importance to economic matters and therefore may undertake military actions to safeguard resources for industrial production ignores a number of changes undergone, and widely acknowledged, in the relationship between the state and economic actors in the developed world after the early 1990s.[295]

History gives ample examples of contexts in which the state apparatus has used the military instrument in order to support trade (mercantilism) or industry (industrial colonialism). It should be noted that interventionism in this context does not have to imply that the state ensures welfare provisions of the continental (corporatist) or northern (social democratic) European kind. Rather, interventionism is a diverse set of practices and beliefs that the state apparatus has a responsibility to act domestically and internationally in order to assist economic actors within its territory. As the histories of the British Empire and the American twentieth century demonstrate, such practices are not antithetical to liberal regimes.

Although the First World War is sometimes explained as a break with the liberal free trade regime of the nineteenth century it should not be forgotten that the rising international tensions between the European powers in the latter half of the nineteenth century coincided with an economic downturn (1870s) that led to protectionism and an increased international role of the state in promoting the economic/industrial interests of the country. In terms of international military actions in order to exploit and hold resources in the form of raw materials, it was during the later nineteenth century that the European powers decided not only to divide the African continent among themselves but actually to inaugurate state-led exploitation of its interior. Previously, colonial enterprises had been largely a matter of private enterprise.

What this amounts to is that state-led scrambles for and conflicts over natural resources have been historically linked to international interventionism by the state in economic matters. In more recent history, such interventionism has been connected to downturns in the international economy.

It is clear that natural resources are scarce and precious and possibly increasingly so as we progress into the twenty-first century. However, the connection between their desirability and armed conflict, particularly by states, to acquire them is less than clear.[296] If armed conflict was the only means of securing possession, or in

[295] For this argument see Klare 2001:213

[296] Smil's (1996:6) sober assessment on this point is worth quoting in extenso: '…there have been no instances of running out of a major mineral resource on a large scale. Instead, long before reaching the point of depletion, the rising cost of harnessing a diminishing resource pushes us to do one of three things, singly or in combination. First is to lower demand by devising better

any case supplies, of precious commodities then it is quite surprising that we have seen so little overt conflict over oil and so few military operations to secure possession over oil-rich territories during the twentieth century. Arguments about a future marked by armed competition over oil, minerals or timber – supported by evidence of the role of raw materials in current conflicts, which are taken to be signs of things to come – imply notions of 'tipping points' in relation to supply and demand. Beyond these tipping points which are predicted to occur in the future, the supply-demand ratio will be so extreme that market mechanisms will no longer suffice and conflict and territorial possession will be inevitable.

This is not to deny the importance of raw materials or the problems arising from depletion of natural resources by a growing population with rising living standards. On the contrary, these issues are eminently important and worrisome. Rather, it is the idea that the attractiveness and scarcity of certain resources is more or less automatically linked to conflict that is problematic. It is an idea with a strong common-sense appeal, similar to the much-vaunted ideas about 'spill-over' and 'contagion' of instability, but the arguments underpinning the idea that this constitutes an 'emerging landscape of conflict'.[297]

As pointed out by Margaret Beckett, the former British Secretary of State for Foreign and Commonwealth Affairs, when discussing the conflict potential of resource scarcity the relationship between current demand and future supplies cannot be taken at face value. Since technology has the potential of making use

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product or convertor designs and smarter utilization patterns; the lowered specific consumption greatly extends the lifetime of known stocks. This trend has been seen with every mineral resource: after first rising and then reaching a clear plateau, the specific consumption of all metals and fuels (measured in terms of or energy value per GDP) has declined as countries proceed through the successive stages of economic development. A second option is to turn to lower quality deposits that are either easier to obtain or, with improved techniques, cheaper to recover per unit of final useful product than the originally exploited stocks; this shift has occurred repeatedly in the mining of metals and fuels. Third is to find effective substitutions. Substitution of silicon for copper in telecommunications is perhaps the best example: the former element is the second most abundant constituent of the earth's crust'. (My underlining)

[297] See for instance Klare 2001:23 Klare's view of history is simultaneous synoptic and myopic, stating that 'Human history has been marked by a long succession of resource wars –stretching all the way back to the earliest agrarian civilizations. After World War II, the relentless pursuit of resources was overshadowed by the political and ideological exigencies of the US-Soviet rivalry; but it has resurfaced with fresh intensity in the current era.' Klare 2001:25

of resources more efficient, it can create more mileage out of existing supplies.[298] Considering that in many countries, efficiency in energy consumption stands in direct correspondence to the level of development, there is significant room for political efforts to dampen the acuteness in the demand for energy, for instance through programmes of technology transfers.

The overall point of this argument is that although large-scale state-led securitisations of natural resources, possibly with concomitant military action, are distinctive future possibilities a number of steps involving successive changes in permissive causes, most importantly the world economy, lie between today's world and a hypothetical future of 'resource wars'. The role that climate change may have in such a scenario will probably be in its disruptive effects on the world economy.

4.6 Climate Change and the International System

For methodological and pedagogical reasons the analysis above isolated climate change from other important factors in the international politics of the twenty-first century. Realistically, however, climate change must be seen as having effects together with other major international issues. In fact, some of its most important implications actually stem from interactions with other challenges to global governance. When other global macro-trends are taken into account the conclusion that climate change may act as a strong 'conflict multiplier' or, as this report has tried to argue, 'stress multiplier' on societies and states is supported. The following section discusses a number of future trends that will intertwine with that of climate change over the coming fifty years: Scarcity of fossil fuels; population growth; the risk of climate change weakening international institutions.

1. The coming fifty years will include other worrying trends such as the increased scarcity of fossil fuels combined with the prodigious growth of economies such as China's and India's.
2. Expanding populations, particularly in the South have been straining the resources of states, societies and ecologies for the past fifty years and will continue to do so, albeit with increased effect, over the coming fifty years.[299]

[298] Beckett 2007:57

[299] For example, the population of Kenya has increased tremendously over the past century as well as the past fifty years. In 1900 it numbered around 1m people, 4 m after 1945, around 8m in 1963 and 35m today. Estimates of future growth project the population at over 40m in 2010 and 57m in

Even without climate change, these developments constitute substantial challenges for national and regional political, economic and ecological stability in many areas. Seen in isolation, they could also lead to the necessity of international interventions to support failing states or to stabilise states already in a state of 'failure'. Together with climate change, which exacerbates the strain on natural, societal and economic resources, they pose formidable challenges.

3. The (political) conflicts over the global inequalities between countries that could come to be seen as driving climate change and those affected by it could spread to other issue areas of international politics. A damaged relationship not only between North and South but also between new economic powers such as India and China and poorer countries could block institutions of global governance, most importantly the United Nations, which could lead to a weakened international community in the areas of mitigation and adaptation to climate change and multilateral management international peace and security.[300]

Particularly problematic is the potential of failed diplomatic management of climate change to block the United Nations in the area of international security. This report concurs with many others on the same topic that one of the most salient security effects of climate change is the destabilisation of countries or even entire regions.[301] Such developments would inevitably call for multinational responses in the form of combined peacekeeping and state-building operations. However, if multinational institutions have been damaged in their legitimacy or are blocked by conflicts arising from other aspects of climate change management, it may prove difficult to either to assemble large multinational coalitions to undertake such missions or to secure the legitimacy of international interventions through the United Nations.

It is difficult to envisage that climate change would weaken institutions such as NATO or the OSCE. The former is the most important and powerful (capability and institution-wise) organisation that could intervene in states or regions

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2025. Nairobi's population alone has climbed from 0.5m in 1963 to 6m today, most of who are living in slums. The Economist 2007b:44

[300] cf. WBGU 2007a:6

[301] WBGU 2007a:5

threatened by destabilisation or collapse. Regarding its internal politics climate change would probably not alter its capacity for action. However, in an international climate characterised by mistrust, tensions and resentment a NATO-led intervention may have difficulties securing legitimacy. In the absence of formal legitimacy conferred by the United Nations or informal legitimacy conferred by a favourable international opinion, a NATO-intervention could increase international tension. Indeed, member states may recognise this and abstain from undertaking an intervention that would be greatly needed from a material perspective but too costly from a political perspective.

In the absence either of multinational institutional frameworks or international consensus to undertake interventions individual countries may be tempted or, given the gravity of imploding countries or regions on their borders, forced, to undertake unilateral action. Such actions may further increase tensions in the international system since they would weaken the restraining international regime centred on the United Nations that has been in place since 1945. A very undesirable future is one in which there may be a larger need for international interventions in the peacekeeping–peace enforcement spectrum, combined with tasks of a 'state-formation' character but with multilateral efforts hampered by a climate of distrust and mutual suspicion on the part of the greater powers of the international system. Therefore, this report stresses that the interconnectedness between many different aspects of the politics of climate change must be brought into considerations. Actions, or a lack of action, in one area that is not directly related to more traditional security concerns, such as mitigation, may have knock-on effects on areas that are related to very concrete security concerns, such as international crisis management.

Another problem concerns not so much adaptation as it does mitigation. Unless and until effective substitutes for fossil fuels have been developed, countries may be unwilling to reduce their use of fossil fuels for energy generation and as propellants out of security interests. Cutting down on carbon emissions and on carbon based fuels both for military and civilian purposes may be seen as risky in the sense that one could lose out in military terms to actors who still use fossil fuels. Hence, being risk-averse in relation to military competition may generate a greater degree of risk-willingness in relation to climate change effects.[302] This problem is a case of weighing the known risk, i.e. military aggression, against an unknown one, i.e. climate change. This kind of thinking, particularly if major players strengthen each others perceptions that making the transition from fossil fuels to other sources of energy could render them vulnerable, at least in a

[302] Rasmussen 2006:40

transitional phase, could severely impair mitigation efforts.[303] However, the truth of the matter is that this kind of reasoning has a definite sell-by date since the supplies of fossil fuels are probably waning. Furthermore, because it involves weighing two risks against each other, the process of risk-taking is double-edged. A country prepared to accept the risks of adapting to a less-fossil intensive energy profile, through efficiency measures as well as through innovation, will avoid the risks that neglecting such evolutionary steps entail. In Rasmussen's apt phrase: 'if you are prepared to accept risks that your competitors are not, then you will forge ahead as they stop at the brink while you take the leap[304].' It should of course be born in mind that willingness to accept risk by innovating might be perceived as a threat by others less inclined.

[303] Hence, the classic deadlock of international politics known as the 'security dilemma' comes into play in relation to mitigation of and adaptation to climate change. For a description see Jervis 1976 chapter 3 esp. 62-67 See also Holsti 1996:9

[304] Rasmussen 2006:40

5 Conclusions

This section contains the conclusions and policy recommendation that can be drawn from the report begins by recapitulating some of the methodological structure of the report. Firstly, the report only deals with developments until the year 2050 and can only briefly and summarily extrapolate what might happen, ceteris paribus – with all the problems it brings –, towards the end of this century, when climate scenarios begin to predict more dramatic consequences. A second main methodological feature of the report is that it operates with a traditional concept of security. This perspective entails focusing on inter-state relations as well as on the role of the state as a mediator and shaper of social processes. This is a factor that marks this report out in relation to other reports, such as those of the WBGU, which operate with a much broader definition of security (human security).

One must carefully distinguish between different kinds and degrees of climate change when assessing the various consequences for international politics and international security. In this report the choice was made to focus on a 'medium-range' scenario, corresponding roughly to the A2 scenario of the IPCC, which means that it is assumed that climate change will occur but not to the extent as in the 'worst case scenario', i.e. A1FI. Before dealing with the conclusions from the bulk of the report some possible consequences of unmitigated climate change are briefly discussed.

Unmitigated climate change may create potentially unmanageable economic, political and social conditions in the latter 21st century. Beyond that, conditions for stable international and domestic politics may become substantially damaged. We want to stress that unmitigated climate change will bring considerably worse consequences than those dealt with in this report, particularly in the long run, by which we mean beyond 2050. With larger increases in global mean temperatures as well as regional temperatures and higher levels of sea level rise the effects of climate change will get worse. These effects include more severe droughts and floods, stronger shifts in precipitation, greater intensity of frequency of extreme weather events even higher temperatures with potentially grievous effects on ecosystems, crops, fisheries and thereby food security. Beyond 2050 and particularly beyond 2100, the consequences of embarking on such a trajectory would be far more grievous and potentially harder to manage that the ones covered in this report. Because of the long time-perspective as well as the very extreme nature of the long-term changes of unmitigated climate change, the exact consequences are difficult to estimate. Global sea level rises of one metre or more have never previously been encountered by mankind. If carbon emissions

and thus climate change proceed unmitigated for a good part of the 21st century, we may see very radical changes in the 22nd, such as the beginning melting of the Greenland ice cap, which could raise sea levels a number of metres world-wide. The longer climate change proceeds unmitigated, the larger the risk of unleashing so-called independent drivers or non-linear effects. One such driver is the large-scale thawing of Siberian permafrost, releasing enormous quantities of methane, an even more powerful greenhouse gas than carbon dioxide, into the atmosphere which would speed up and reinforce climate change. No one can foresee the social, economic or political consequences of such a development but the age experiencing it would likely to be one of considerable global turmoil. Furthermore, phenomena such as this have never been encountered polities engaged in international, even global, politics, which are in the business of estimating, calculating, managing and pre-empting security challenges. The introduction of strong climate change – a complex and threatening issue – into a world of such complexity may give rise to security dynamics that could be very hard to contain within the current, relatively stable, international system.

If however, a large part of the world's coastlines where the majority of the world's population lives and most cities are located should slowly but surely risk flooding (which 6+ metres of sea level rise would entail), then the societies and states of the world would be exposed to financial and social pressures that they may not be able to handle without breaking down. Inland areas might face pressures from state actors that seek to secure and (re)develop territories, from ordinary people seeking refuge from storm surges and from displacement of people due to economic strain.

Furthermore, the Stern-report has calculated that the economic consequences of unmitigated climate change could be as large as those of the two World Wars and the great depression of the 1930s entailed. Under such circumstances the international system as well as individual states would face large strain, which in turn might move the international political climate in a more conflict-prone direction. Worse still, such a development could impair the possibilities of developing and implementing technologies that could ensure a transition from fossil fuels and adaptation to climate change. In other words, powerful climate changes may undermine our capacity for technological development in the long run.

This report also raises the point that the unprecedented nature of climate change as strong as the worst-case scenarios developed by the IPCC constitutes a risk in itself. Embarking on a course that propels mankind radically beyond historical experience – particularly with a hitherto unprecedented speed, two or three human generations – may place us in a situation where neither history nor

security analysis, two key assets in determining policies for stability, can be of avail can be quite dangerous indeed.

Should climate change develop strongly and rapidly, the international system itself could be placed under highly problematic strains and tension.[305] They could derive from the numerous political issues associated with global mitigation and adaptation measures which could give rise to conflicts of interests.[306] If climate change becomes as strong as in the worst case scenarios then the number of cases that may require international interventions and humanitarian assistance could become too many for the current UN system too handle. Although the mainstay of this report has not focused on the challenges to international politics posed by mitigation and adaptation efforts, this is an area where much more analytical work should be undertaken.

Large climate changes also constitute a greater peril to 'human security'. In this report we have chosen a perspective on security that stresses the primacy of inter-state relations and the importance of the state in other social, economic and political processes. However under certain conditions state-centred security and human security can no longer be understood as wholly separable. Extreme changes in climate are examples of such conditions.

One conclusion of the implications of any scenario that includes use of fossil fuels at current or higher levels is that many of the problems envisioned under the less severe scenarios will happen, but later and far more grievously. These problems include the potentially destabilising effects on the oil-exporting countries when they can no longer sustain their economies. Coupled with the severe consequences of climate change and with the difficulties following from continued fossil fuel dependency in a world with scarcer resources of oil, the challenges under a scenario of moderate climate change are much less than those under a 'high' one. A major challenge for politics is that the negative consequences of the fossil-intensive scenario lie further in the future than those of the scenarios with reduced fossil fuel use. Therefore it may be tempting today as well as in the near future to avoid confronting problems, possibly including conflicts, in a short-term perspective, preferring to leave them to future generations. This would amount to avoiding the lesser evil in the short-term in favour of the greater one in the long-term.

On the basis of this very brief survey it can be concluded that reduction of CO_2 emissions and thereby of climate change are definitely called for. The consequences for international politics and security of strategies aiming to

[305] Cf. WBGU 2007b:231
[306] WBGU 2007b:49

achieve this end and secondly the consequences that even the mitigated climate changes may bring are summarised next. When writing this report no probabilities were assigned to different scenarios. We have kept to this rule with one important modification, namely that this report does not include the most radical reductions of emissions of greenhouse gasses and thereby of climate change, i.e. those envisioned in the B1 scenario of the IPCC. This was partly because the probability that this scenario materialises was deemed to be unfortunately quite low and partly since the difference in the Earth's climate would be too slight to make a political impact. It is however worth mentioning that the political efforts to achieve a reduction in greenhouse gas emissions tantamount to the B1 scenario would be so large as to create reverberations in the international political system. This would in itself be a valuably subject matter for an international relations study.

This report argues that mitigation/adaptation measures also bring consequences for international politics and international security. The modern sociological literature on 'world risk society' emphasises that even those measures undertaken to prevent or forestall future risks may themselves beget new and unforeseen risks. We shall in the following summarise some of the risks that mitigation and adaptation measures presuppose in the mid-range climate change scenario.

5.1 Security Risks of Treating Climate Change as a Security Risk

As section 2.2. demonstrated, the question of whether changes in the (natural) environment should be linked to security in the traditional understanding is a long-standing controversy in the field of security studies and international relations. The position of this report is that one should proceed with caution when linking climate change, which is an environmental factor with potentially degrading effects, to 'traditional' security. To briefly recapitulate, this report has approached the issue of whether climate change can have consequences for the politics of security from a perspective that defines 'security' as actions pertaining to the use of organised collective violence with political (and economical) ends. This option was chosen over a wider understanding of security, for example as human well-being ('human security') or societal resilience, in order to provide a parsimonious analysis of a subject that is rarely connected to environmental factors.

This report concludes that militarization and securitization of climate change may have problematic results on international relations in general as well as on mitigation of and adaptation to climate change in particular. First, it may spark

off a process of mutual securitizations which would raise the probabilities of conflict.[307] This, of course would be problematic in itself but it would also entail a risk of consuming funds that could be used for mitigation and adaptation purposes. It would draw political focus away from mitigation and adaptation efforts as well as fostering an international climate in which co-operation around the issue(s) of climate change would be more difficult. A securitization of climate change could also lead to a greater concern with and focus on securing energy sources in order to safeguard the national economy as well as the fuel needs of the armed forces. A worsened security climate in which security is increasingly seen as divisible could also entail, logically, a perspective in which the world economy is seen as a zero-sum game becoming dominant among the world's decision-makers. As noted in section 4.8. above such a future could entail that reducing consumption of fossil fuel, a key aspect of mitigation policies, being regarded as a risk for national security reasons.

If climate change only proceeds to moderate levels, however, the effects can still pose large challenges to domestic and international politics, but these are potentially manageable and do not automatically lead to (armed) conflicts. This report argues that climate change alone is unlikely to lead to conflict although it can exacerbate existing tensions or be used as a tool for mobilisation by political leaders interested in furthering their own ends. Thus, the report concurs with the argument of the Stern Review which argues that the risk of conflict in connection with climate change is far greater in countries with a record of conflict and poor governance. [308]

In itself, the climate is not a threat, it is a condition. Instead, the consequences of climate change are conditioned by the institutional, social, economic, political and historical context of the societies facing them. Whether climate change will be a causal factor in increasing the risk of conflict depends on existing patterns of intra- and inter-state politics as much as it does on the effects of climate change. This conclusion was enabled by the systems-theoretical argument presented in Section 1.3, which outlined the distinction between natural and social systems. One of these important factors is the extent to which political leaders of a particular region stand to gain by exploiting climate change to further their own ends.

[307] 'Securitization' denotes the process whereby a political issue achieves widespread acceptance as a security issue which allows it to be treated differently than would otherwise be the case. Securitisation is also the first step in a process whose final phase is the use of military violence. Cf. Buzan, Wæver & de Wilde 1998

[308] Stern Review Report 2007b:112

Section 2.5, 'Paths to violent conflict under conditions of climate change' outlines ways in which this could take place. The first path was that political actors could exploit climate change induced strains, for example migrants, to gain or retain power in an internal power struggle. In such a scenario the security of groups that oppose the regime or that are used as scapegoats, e.g. migrants, is at risk. The second path concerns states in regions with predominantly adversarial security relations. In such a region under conditions of strong climate change, a country weakened by climate change may be under threat from neighbours seeking to exploit the situation for material or political gains through military means. The third path was that states may go to war in order to secure resources for their economies and populations. In order to materialise, a number of structural changes would have to occur. The most important is that the world economy would have to become 'renationalised' and the state, once again, would assume the role of its armed protector and supplier. Another is that the restraining function that nuclear weapons have played in the post-1945 era would cease to be effective. The fourth path deals with what we have chosen to call 'subsistence conflicts', namely conflict where groups that very close to the means of their subsistence (e.g. farming, pastoralism) and possess the means of violence, or even informal or formal authority to use them, may come into conflict over scarce resources of land or water. The main feature of these situations is the absence of a modern interventionist state and well-functioning market mechanisms. There are a number of areas in the world today where these conditions are at hand. In the future, climate change may induce strains on several areas that would cause the deterioration of both state and market mechanisms and hence increase the number of contexts where subsistence conflicts may materialise.

5.2 Decreased Interaction Capacity

Section 2.5 argues that climate change might reduce state (inter)action capacities due to the strain it might place on the economy, society, agriculture etc. through its multiple effects. Although this is at the core of why climate change is a (political) problem it has two widely diverging effects. As the sociologist Gianfranco Poggi has recently reminded us, power is fundamentally ambiguous, capable of being used for good and evil, to create security as well as insecurity.[309] Hence the loss of state interaction capacities may have both beneficial and harmful effects, but the connections between these two main outcomes are complex.

[309] Poggi 2001:5

As defined in Section 2.5 a loss of state interaction capacity means that the state can do fewer tasks and/or perform less well in the tasks it undertakes. This can result in a weakening of the state's capacity as a provider of internal security but the reduction in coercive powers that can be projected internally as well as externally means that it is less of a threat to other states in material terms.[310] In other words, a loss in interaction capacity would mean a decrease in the resources that a state could use, for good and evil, against its neighbours as well as against its own population. This argument says little about whether the risk of inter-state conflict in a region decreases or not, only that the resources (monetary, organisational, technical etc.) do.

Historical cases could be used to support the argument that states that find their resources dwindling and regional position slipping become more ready to resort to warfare.[311] Such examples may however be misleading in the case of future climate change-induced stress. Firstly, cases in which declining states have resorted to war show that the losses in power were relative to other states in the same region. Judging by the prognoses of the IPCC, the natural effects of climate change will affect entire regions and not individual countries. However, the states of a region might differ with respect to the degree to which they are prepared. Differences in how countries are prepared, economically and institutionally, to handle the effects of climate change may therefore be important in creating regional inter-state dynamics. Consequently, it can be very important to take a regional, and not a country-based, perspective on foreign aid with the aim of strengthening adaptive capacities.

Secondly, the prevalent pattern of international relations in a region and the types of regimes or governments of the respective countries are crucial factors in deciding the direction towards conflict or cooperation.[312] In order to understand this, one must take a balanced view of the historical record. Simply limiting one’s point of reference to European history until 1945 provides a bad analogy to the situation of today and the near future. Contemporary international politics take place in a global system and inter-state international politics in many regions are in many cases influenced by relations between the 'great powers'. This was the prevalent modus operandi of the international system during the Cold War and although the world is unlikely to be so decidedly influenced by the rivalry of two – or more superpowers again it can serve as a useful reminder of how the dynamics between different parts of the world are tied together.

[310] And, lest it be forgot, sometimes to its own citizens
[311] e.g. France in 1870 and Austria-Hungary in 1914 For a development of this argument see Schroeder 2004:148
[312] This argument is made forcefully in Holsti 1996

Although there are some regions whose security dynamics appear to be endogenous to a high extent, such as South Asia, there is every reason to believe that the relations between the great powers of the future will be important, directly or indirectly, for many parts of the world. Therefore the conditions prevailing between the EU, the USA, China, Russia and perhaps Brazil, Japan and India might have a great impact on determining the shape of future security dynamics in many parts of the world, particularly Africa. When it comes to responding to climate change-induced strains (of social and well as natural kinds) we believe that relations prevailing the in the 'West', particularly in the North Atlantic security community, will be most important since this group makes up the major actors in foreign aid, foreign direct investment (FDI)[313] and international humanitarian interventions.[314] Thus, losses in state interaction capacity could lead to regional conflicts, but they will probably not take the form of powerful, "Clausewitzian" organisations facing off on battlefields reminiscent of nineteenth and twentieth century Europe, the reason being that the resources to sustain such efforts will probably be lacking.

However, reduction in the capacity of the state to provide services, including support to the economy, and public goods, including security-related goods, might have other problematic consequences. The risk of instability, human suffering, increasing crime and possibly challenges to societal cohesion may increase. This is why climate change may bring effects that fall within the sphere of security politics, potentially with international ramifications in the form of peacekeeping/state-building operations. A weakened state may not be able to respond to such problems efficiently. To do so would require a sustained and balanced effort to calculate and economise on remaining available resources. A precondition thereof is a well-organised and educated bureaucratic administration and political system allowing interest representation and channelling of public demands. Such conditions underpin not only state efficiency but also societal stability. To gauge the width of potential problems under the strain that future climate change might bring, one could conduct a survey of the countries in the world and see how many meet the above criteria. Of course, few of them do and they are located in the North while those than do not are located in the South.

A major issue of concern in the interface between climate change and security politics is the suspicion that the strains that climate change will probably bring

[313] This could possibly change with the emergence of China as a major player in the world economy.
[314] It should be noted that countries such Bangladesh, India, Nepal and Pakistan are major contributors of manpower in peacekeeping operations under the aegis of the United Nations. In 2007, the four countries contributed 33,334 personnel out of the 83,328 employed in peacekeeping operations by the UN. See www.un.org/Depts/dpko/dpko/contributors/2007/Apr07_02.pdf accessed 20070926

could cause more states to become destabilised and possibly become 'failed states'. Much of the literature on 'failed states' focuses on states that today are weak or where the signs are already evident that they are faltering. Naturally working to counter 'state fragility' is a crucial task,[315] but we argue that the focus should not be exclusively on the weakest members of the international community. Instead, we recommend that the political focus be directed to what we call 'pivotal' states, a classical geopolitical phrase to denote a state whose regional importance is of such magnitude that developments in it will have reverberations across the region. There are two reasons why more support and attention in the form of 'early warning' observation should be given to relatively strong countries: While (relatively) strong and stable, they could be very important in supporting economically, politically and – if need be – militarily, an entire region beset by climate-change induced problems. If they are weakened, not only does this positive and preventive influence fall away, but the decline, destabilisation or, in the worst case, demise of a regional anchor has a greater potential for destabilising an entire region. Furthermore, an international intervention with the intention of remedying the situation in a large, populous and (formerly) resource-rich country is immensely more difficult than intervening in small and relatively resource-poor countries. Potential 'pivots' in this sense include Egypt, Kenya, Nigeria and South Africa.

There are several factors that introduce a large measure of uncertainty in the analyses concerning the consequences that climate change might have for international politics. The primary source of uncertainty concerns what climate change and mitigation/adaptation measures will mean to the world economy. A serious economic downturn may threaten state stability, disrupt international relations and possibly prompt a return of the state in economic matters. The latter could entail an increased tendency towards neo-mercantilism and protectionism, the long-term results of which could be the securitisation of international economic relations. Historically, stability in South-east Asia and in the Middle East can be directly connected to the state of the economy of the region. A second source of uncertainty concerns the independent drivers of climate change, such as the release of methane from melting permafrost or the collapse of the Amazonian rainforest. A third source is the interactive, dynamic and non-linear nature of the politics of security. It is vastly difficult to forecast what form security relations will have in the different regions of the world, as well as on a global level over a period of the coming forty years, with or without the complex of issues that climate change entails.

[315] WBGU 2007b:43-48

Some benefits of a low-level scenario n which a successful transition away from fossil fuels is underway are obvious, most importantly less severe effects of climate change in the near and distant future, thus minimising this source of instability and thus avoiding worsening of the conditions of international politics. This scenario also lessens the serious effects of fossil fuel dependency. Such effects include the possibility of 'resource wars' and of negative impacts on economies and societies across the world once the more readily available supplies of fossil fuels run out. To conclude, the risks associated with climate change are considerable, but they are primarily socio-political in character rather than climatic.

Recommendations for Policy

A great challenge concerning the impact of climate change on international politics is to construct a wide consensus that understands the negative effects of climate change as an issue of common and 'indivisible' security. Emanuel Adler defines the concept of indivisible security as an understanding that 'one state's security is indivisible from that of other states'.[316] This understanding differs from 'divisible' security which is more akin to a zero-sum game in which one state's gain in security equals another's loss. Such a condition does not have to be an accurate reflection of reality. Instead, when international politics operate under tense and conflictual conditions, politicians tend to *perceive* a neighbour's strengthening of his security as a potential threat.[317]

Primary threats to ecosystems and societies induced by climate change are what this report calls the natural effects of climate change, e.g. sea level rise, droughts, floods, extreme weather events and increased temperatures. In contrast, secondary threats in connection with climate change are man-made: political disorder due to collapsing states, conflicts due to opportunistic regimes or worsening inter-state relations due to fearful leaders. Threats in this latter category are more likely to materialise if natural phenomena not understood as common threats under a paradigm of indivisible security. Collapsing states are more likely if proactive and preventive measures are not taken and the emergence of inter-state rivalries on regional and global levels are made more likely by a general understanding of security as divisible. An example, as argued

[316] Adler 1998:119 Notions or discourses of indivisible security can exist between sovereign states without necessarily forming a 'security community' (Adler 1998:122), a tighter association characterised by a common 'we-feeling'.

[317] For an analysis of how cooperative and conflictual paradigms of security politics have operated historically see, Little 1989

above, would be if adaptation measures in one country were seen as potential threats to neighbouring countries.

Consequently, the way to counteract such developments would be to build an understanding of security as indivisible. Traditionally, discourses of military security have been based on notions of divisible security whereas environmental discourses have been much easier to formulate in the form of indivisible security. To use a familiar phrase, 'pollution knows no borders' whereas military security presupposes borders or in any case boundaries. Therefore, as others have argued in relation to environmental security[318] securitisations with military overtones may undermine the ambition to build an understanding of indivisible security in which climate change would be seen as an equal threat to all states of the world.

For an increased understanding of the connections between the aim of indivisible security and the means that enable it, it is worthwhile looking at the region where states have managed to build a security community with indivisible security as an important component, namely the EU. An important aspect of building an understanding of security as indivisible was to 'desecuritise' relations between the states of Europe. This was done principally by cooperating closely in areas other than security, although all participants were strongly aware that this was being done in order to promote common security.[319] We are in no way claiming that reproducing EU-like structures all over the world would be a solution to the security problems that climate change potentially entails, not least since certain important factors in its formation are not possible to re-create.[320] The lesson to be learned in relation to common and indivisible security lies rather on another level. It can be highly effective to work towards a common aim through areas where the core problem is not directly addressed and thereby activated but nevertheless attended to. In the case of climate change joint collaboration between regional and global powers on foreign aid to the most vulnerable countries could be an example. Yet another is to engage the many and powerful financial institutions, such as the IMF, the World Bank, the African Development Bank etc. in comprehensive schemes to build adaptive capacities in highly exposed states.[321]

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[318] For example Deudney 1991, Matthew 1999

[319] See Milward 1992:320-333, 337

[320] The most important of which was the role that the hegemony exercised by the United States played in allaying traditional security relations in Europe. Buzan 1991:219-221 and also 202-205, 207-209, 215 & 218

[321] International funding mechanisms have been agreed upon by the parties during COP (Conference of the Parties)-7, the LDC Fund (the LDCF), the Special Climate Change Fund (SCCF) and the Adaptation Fund. Scientific Expert Group on Climate Change (SEG), 2007:94-95. It should also be noted that the World Bank is already highly active in relation to fighting climate change. See

This line of thinking must be applied to strategies of adaptation and mitigation alike if these are to foster international stability. As argued above, security dynamics in relation to adaptation measures are not the unique concerns of developing countries, but could also developed among countries in the North unless such measures are met in tandem. An important aspect of a strategy for international stability in the face of climate change is to plan mitigation measures from the perspective of indivisible security. One key factor in this respect is to devise strategies to ensure the sustained stability of the Middle East and other OPEC-countries during a transition away from a world economy dependent on fossil fuels for energy. If one aims at creating conditions of indivisible security in a wider area, a one-sided emphasis on the 'energy security' of consumers in the North must be avoided in the politics of mitigation. The producers of fossil fuels must also be protected from the destabilisation which changes on the demand side could create. It would be highly problematic if a situation were to occur where states and organisations in the oil-producing part of the world were able to blame the North for ruining their economies, and by extension, societies. Consequently, a comprehensive view of a common security must take economic, societal aspects and ecological aspects into account.

5.3 The Current Window of Opportunity

A final word that relates to the fundamental purpose of this report is in order. Seeking to understand something is also involves taking part in the shaping of the discourse on that particular phenomenon. In relation to political phenomena and concepts this activity entails taking part in a process that relates to political action in connection with that particular phenomenon. Therefore, it is appropriate to conclude this section with some reflections on how discourses are established and the consequences of establishing a dominant discourse on a political phenomenon namely how climate change how should be understood in relation to vulnerability and security.

Making Sustainable Commitments – An Environment Strategy for the World Bank 2001 Annex F pp.173-180 from http://siteresources.worldbank.org/INTCC/Miscellaneous/20733920/EnvStrategyAnnexF2001.pdf access 20070924 For a list of climate-change related projects financed by the World Bank see http://web.worldbank.org/external/projects/main?pagePK=217672&piPK=95916&theSitePK=40941&menuPK=64140078&category=THEME&goalid=81 access 20070924

Throughout, this report stresses the importance of social and political structures, if not for determining actions then for setting the scope of possible actions. Ways of thinking, talking and acting about a certain issue solidify over time and turn into structures that both restrain and enable action. Although most concepts in politics are ‘essentially contested’ the terms of debate can in fact become very rigid with time and in some cases simply become a natural way of talking, thinking and acting in relation to a certain political issue. Although the scientific community has debated climate change for some time now, it is only recently that the issue has entered the political mainstream and reached its current, highly exposed status. This means that the international community now faces a window of opportunity for framing the issue of climate change. In a couple of year’s time, mitigation/adaptation issues of climate change will have found their dominant interpretation. This means that it is urgent to find a way that establish a discourse in which climate is understood as a common responsibility and as an object of indivisible security. Failing to do so now when the time is ripe might result in a discourse in which handling and responding to climate change is seen as the responsibility of individual states and a factor in divisible, and thereby zero-sum, security.

That said, although the present could in retrospect, prove to be a formative period for international politics on climate change, it must be stressed that formative moments do not last forever but discourses are subject to revision over time. Future political developments, which could be unrelated to changes in the earth's climate itself, may come to change the discourse on climate change as a common responsibility and common vulnerability. Future events may create new windows of opportunity to change the way we think, talk and act about climate change. Although such processes are complex and lie in the future, we need to be aware of them since our engagement with climate change will doubtlessly be very long-term. Therefore continuous efforts must be made to establish and maintain climate change as a venture demanding international cooperation, not least because of the security political ramifications it otherwise could bring.

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