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PUBLIC EVIDENCE SERIES

UNICEF in Pakistan, 2000 to 2025, Volume II: Safe & Resilient Environments

Water, Sanitation, Hygiene, Climate Resilience and Humanitarian WASH.
Twenty-Five Years for Children in Pakistan: An Independent Assessment

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October 2026

Independent study. Not commissioned, requested, reviewed or endorsed by UNICEF.

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About the Public Evidence Series

This knowledge product was independently initiated by the Centre for Social Analytics and Development Support (CSADS) under its Public Evidence Series. It was not commissioned, requested, reviewed or endorsed by any organization it covers and is not an official position of any of them. Drawing on public sources, it synthesizes what the evidence says about its subject, identifies where the evidence is too limited to support stronger claims, and considers implications for future policy, programming and planning. The Series offers briefs, reports, scorecards and notes that separate evidence from judgment. AI tools supported research and drafting, every statistic is traced to a cited source, and all content was reviewed by the principal investigator.

About this volume

Supporting documentation. Detailed technical evidence studies, analytical files and source level verification materials are maintained as supporting documentation and are available on request.

This volume is an independently initiated, non commissioned longitudinal contribution evidence assessment. It was not requested, commissioned, reviewed or endorsed by UNICEF. Its purpose is to examine, using publicly available evidence, how Pakistan's WASH environment changed between 2000 and 2025 and where the evidence supports a credible contribution claim for UNICEF. The volume consolidates a longer technical WASH study and the cross report Claim Evidence Contribution Ledger into a shorter institutional synthesis. Detailed technical evidence studies, analytical files and source level verification materials are maintained as supporting documentation and are available on request.

The volume deliberately distinguishes population change from organizational contribution. National sanitation, water and hygiene outcomes are treated as Pakistan wide results shaped by government, households, markets, development partners, economic change, urbanization and repeated shocks. UNICEF's role is assessed separately through direct service delivery, behaviour change, model development, government adoption, public finance leverage, institutional WASH, humanitarian coordination, climate resilient design and regulatory/system support. Where public evidence does not permit stronger attribution, the language is correspondingly cautious.

AI assisted methods supported evidence discovery, structured extraction, cross document comparison, pattern detection and drafting. Quantitative claims were anchored to original sources, and contribution judgments were subjected to explicit claim boundary and source verification rules. AI is therefore treated as a research support tool rather than a substitute for evaluative judgment.

This revised edition rechecked the headline statistics against current official and harmonized sources in October 2026. Outcome claims remain bounded to 2000 to 2025. Where a source published after 2025 is used, it is identified as such and it describes a 2025 or earlier observation.

How to use this volume

Table 1 How to use this volume

Reader	Decisions this volume can inform	Start with
UNICEF WASH, humanitarian and climate specialists	Which WASH investments to scale, redesign or stop, and what claim language is defensible in results reporting	Key messages, Executive Summary, Sections 17 to 21
Provincial public health engineering, local government and regulators	Where PATS, institutional WASH and regulation have documented system effects, and where functionality and financing remain open	Sections 8 to 13 and Section 16

Reader	Decisions this volume can inform	Start with
Development and climate finance partners	How to design service performance, resilience and public finance tracking into future operations	Sections 15, 20 and 21; Annex A

Source: Author compilation

Abbreviations

Table 2 Abbreviations

Abbreviation	Meaning
ADB	Asian Development Bank
CGPI	Clean Green Pakistan Index
DREAMS	Developing Resilient Environments and Advancing Municipal Services
EMIS	Education Management Information System
HCF	Health care facility
JMP	WHO/UNICEF Joint Monitoring Programme for Water Supply, Sanitation and Hygiene
ODF	Open defecation free
O&M	Operations and maintenance
PATS	Pakistan Approach to Total Sanitation
PBS	Pakistan Bureau of Statistics
PHED	Public Health Engineering Department
PSLM	Pakistan Social and Living Standards Measurement Survey
SBC	Social and behaviour change
SPSP	Sanitation Programme at Scale in Pakistan
WASH	Water, sanitation and hygiene
WASHREG	WASH regulation assessment approach
WinS	WASH in Schools

Source: Author compilation

Executive Summary

KEY MESSAGES

- Use of at least basic sanitation reached about 72 percent of the population in 2024, but the poorest wealth quintile stood at 30 percent in 2018 against 97 percent for the richest.
- Access to at least basic drinking water is about 91 percent, yet only 45 percent of people use a safely managed service, so access and safety diverge.
- The strongest UNICEF contribution evidence is catalytic and systemic: PATS and PATS Plus (Grade B), selected institutional WASH pathways, humanitarian WASH, and emerging climate resilient and regulatory work.
- The Sanitation Programme at Scale in Pakistan shows heterogeneous district trajectories that do not support a single pooled causal estimate.
- For 2026 to 2030, the priority is service quality, measured sustainability and executed public finance, tracked through programme exposure data designed in from the start.

Pakistan's WASH sector changed materially between 2000 and 2025. The clearest long run national shift is in sanitation. WHO/UNICEF Joint Monitoring Programme estimates indicate that use of at least basic sanitation rose from roughly 37 percent in 2000 to about 72 percent in 2024, while open defecation fell from roughly 37 percent to a single digit share over the same broad period (WHO/UNICEF Joint Monitoring Programme 2012, 2025). These are substantial population gains, but they remain unequally distributed. JMP inequality estimates using 2018 household data show basic sanitation of about 30 percent among the poorest wealth quintile compared with 97 percent among the richest; basic hygiene was about 17 percent among the poorest compared with 94 percent among the richest (WHO/UNICEF Joint Monitoring Programme 2023).

The appropriate interpretation is not that UNICEF caused these national improvements. Government investment, household expenditure, provincial reforms, private markets, other development partners, urbanization, income change and post disaster reconstruction all contributed. The strongest UNICEF contribution evidence lies instead in identifiable mechanisms that shaped how the sector operated: development and diffusion of the Pakistan Approach to Total Sanitation (PATS); sanitation at scale programming; provincial institutionalization and financing; WASH in schools and health care facilities; humanitarian WASH coordination and service restoration; emerging climate resilient design; and regulatory/system strengthening.

PATS provides the clearest catalytic pathway. Public programme records and evaluations describe a Pakistan specific sanitation approach that combined community mobilization, sanitation demand, supply facilitation, school/community components and hygiene behaviour change. The approach evolved through 2008 to 2009 consultations, was used during post 2010 flood recovery, and became the central model for the 2013 to 2014 Sanitation Programme at Scale in Pakistan to Rural (SPSP). By 2016, UNICEF reporting documented provincial mainstreaming, Punjab government scale up and a Sindh allocation of approximately US$13 million for PATS implementation in 13 districts (UNICEF Pakistan 2017). This sequence supports a Grade B judgment for catalytic and systems contribution: UNICEF's role is visible in model development, technical support and policy diffusion, but downstream sanitation gains remained jointly produced by government, communities and other actors.

The SPSP case provides the most useful empirical test of programme contribution. Phase I ran from February 2013 to March 2014, targeted approximately 1.3 million people and operated in 13 districts/agencies using PATS (UNICEF 2014). Publicly comparable PSLM data were reconstructed for eight treatment districts. The results are heterogeneous rather than uniformly positive. D.G. Khan's share of households reporting no toilet fell from 47 percent in 2010 to 2011 to 43 percent in 2012 to 2013 and 23 percent in 2019 to 2020; D.I. Khan fell from 28 percent to 11 percent to 3 percent (Pakistan Bureau of Statistics 2012, 2014, 2021). By contrast, Shikarpur moved from 2 percent to 4 percent and then to 18 percent. Immediate flush toilet trajectories also differed across districts. These patterns are consistent with contribution in several places but do not satisfy the assumptions required for a single pooled causal effect because treatment districts had different pretrends, later programme exposure overlapped and shocks varied substantially.

The heterogeneity is itself a core finding. It suggests that sanitation models did not operate independently of local implementation intensity, household purchasing capacity, government follow up, market conditions, local institutions, displacement, flooding and subsequent investment. A contribution approach therefore provides more learning than a forced average treatment effect: it asks where the model was implemented, what enabling conditions were present, whether gains were sustained, and why trajectories diverged.

Institutional WASH provides another substantial contribution pathway. UNICEF supported WASH in Schools strategies, the Three Star Approach, menstrual hygiene work and integration of WASH indicators into education management systems. During COVID-19, UNICEF supported WASH/IPC work included rehabilitation or installation of WASH facilities in 260 health care facilities within a wider sector response, alongside training and hygiene measures (UNICEF Pakistan 2021). These are meaningful service and system contributions, but they should not be translated directly into claims about school attendance, infection reduction or health outcomes unless those downstream effects are independently measured.

Humanitarian WASH is one of the most recurrent UNICEF roles across the 25 year period. The 2005 earthquake, large scale displacement, the 2010 floods, COVID-19 and the 2022 floods repeatedly required rapid water, sanitation, hygiene and coordination responses. The 2010 floods were particularly important institutionally because emergency sanitation evolved into recovery programming and then into sanitation at scale approaches. The evidence therefore supports a Grade B contribution for humanitarian service restoration and coordination. Durable impact is more difficult to establish because emergency reach is not equivalent to long term functionality or resilience.

After the 2022 floods, UNICEF reporting increasingly emphasized solarization, resilient water system design, water management committees, rehabilitation and government handover. This signals a strategic move from emergency outputs toward climate resilient services. Yet the observation period is short: functionality through subsequent shocks, recurrent O&M financing and water quality performance remain insufficiently documented for a strong long run impact claim. Recent regulatory work similarly has a credible system pathway but population effects largely fall beyond the 2000 to 2025 observation window.

The most important limitation across the sector is that access and quality can diverge. Pakistan's comparatively high access to improved drinking water sources does not establish that water is microbiologically safe, continuously available or equitably affordable. JMP estimates for 2024 place at least basic drinking water at 91 percent but safely managed drinking water at 45 percent (UNICEF Data 2026). Likewise, construction of school or HCF WASH facilities does not establish functionality. ODF declarations do not establish sustained behaviour. Public budget commitments do not establish expenditure. For future accountability, these distinctions should be built into programme results frameworks rather than reconstructed retrospectively.

Overall, this volume judges UNICEF's strongest contribution to lie in catalytic and system change rather than UNICEF only population impact. Grade B evidence is assigned to PATS/PATS Plus system development, selected institutional WASH pathways, humanitarian WASH, and parts of recent climate resilient service/system work. Public

finance leverage and regulation are generally B/C because the contribution pathway is plausible and documented but independent downstream outcome evidence remains thinner. National sanitation, open defecation and water trends remain context or plausible contribution findings rather than attributable UNICEF impacts.

For 2026 to 2030, the central planning implication is to design WASH programming for durability and evaluability. Geocoded exposure registries, stable outcome definitions, implementation intensity measures, independent functionality checks, water quality monitoring, ODF slippage follow up, executed public finance tracking, and explicit documentation of government adoption would allow future assessments to move from retrospective plausibility toward stronger contribution evidence. Climate resilience should be tested by whether services continue to function under subsequent floods, heat, drought and power disruption, not only by whether resilient infrastructure was installed.

Executive Contribution Ledger

Table 3 Executive Contribution Ledger

Outcome / system	Pakistan trajectory	UNICEF contribution pathway	Grade	Sustainability	Main caveat
National sanitation	Basic sanitation rose markedly; open defecation fell	PATS/SPSP, SBC, government adoption	C / B/C by pathway	Moderate	National change is multicausal; use as context, not UNICEF attribution
PATS/PATS Plus	Provincial diffusion and government implementation	Model development, TA, advocacy, sustainability adaptation	B	Moderate to High	National sustainability evaluation remains incomplete
SPSP Phase I	Mixed district sanitation trajectories	Intensive sanitation at scale programme	B/C by district/case	Mixed	pretrends, selection bias and later programme overlap
Provincial financing	Documented Punjab/Sindh scale up and allocations	Planning, TA and advocacy	B/C	Moderate	Commitment is not executed expenditure or counterfactual finance
WASH in Schools	Institutionalization, standards and service investments	Three Star, strategy, EMIS, MHM	B (provisional)	Moderate	Functionality and attendance effects incompletely measured
WASH in HCFs	COVID era upgrades and monitoring	WASH/IPC, facility rehabilitation, training	B	Moderate	Emergency/service evidence stronger than long run health effect
Humanitarian WASH	Repeated service restoration and coordination	Cluster/sector role, supplies, hygiene, recovery	B	Context dependent	Reach is not durable impact
Climate resilient WASH	Growing resilient service portfolio	Solarization, resilient design, O&M committees	B for service/ system	Emerging	Long run functionality remains untested
WASH regulation	Regulatory gaps and reform agenda developed	WASHREG technical support	B/C	Emerging	Population effects mostly beyond observation window
Water safety	Persistent quality challenge despite access	Water quality support and planning	C/D	Uncertain	Improved source is not equivalent to safe water
Equity	Large rural/wealth gaps persist	Targeting vulnerable geographies	C	Mixed	Hardest area targeting complicates comparison

Source: Verified Master Claim Evidence Contribution Ledger, Tier 1 verification pass

Part I: Framing the Safe & Resilient Environments Assessment

IN THIS PART

1. Why WASH, humanitarian action and climate resilience should be read together

2. Research questions and claim boundaries

3. Methodology and evidence hierarchy

1. Why WASH, humanitarian action and climate resilience should be read together

Safe environments for children are produced by more than household infrastructure. Water and sanitation services depend on institutions, public finance, maintenance, markets, source sustainability, water quality, hygiene behaviour and the ability of systems to survive shocks. Pakistan's 25 year WASH history demonstrates this directly. The same districts that expanded sanitation were repeatedly exposed to floods, conflict, displacement, drought, power disruption and rapid urban growth. A narrow service coverage lens therefore misses the institutional conditions that determine whether gains persist.

The longitudinal record also shows a shift in UNICEF's role. Earlier programming combined water/environmental sanitation support and humanitarian response. The 2010 floods accelerated a move from emergency sanitation toward a Pakistan specific sanitation model and sanitation at scale. Later periods increasingly emphasized government ownership, WASH in institutions, urban governance, climate resilience, regulation and system strengthening. Reading these phases together helps distinguish temporary service delivery from catalytic effects that persist through government systems.

For planning purposes, resilience should be treated as a performance property rather than a project label. A resilient water system is one that continues to deliver acceptable service during or after shocks, can be maintained with available finance and skills, protects water quality, and has an institutional owner accountable for operation. Similarly, sanitation resilience includes the ability to prevent slippage back to open defecation after programme support ends. This volume therefore treats sustainability and shock performance as result domains in their own right.

2. Research questions and claim boundaries

The assessment asks four linked questions: what changed in Pakistan's WASH environment between 2000 and 2025; what UNICEF demonstrably did; through which mechanisms UNICEF plausibly contributed to observed changes; and which changes appear sustainable or institutionally embedded. The unit of inference differs by claim. National trends are used to characterize population change; district comparisons test geographic consistency; programme evaluations establish mechanisms and implementation; policy and budget evidence test catalytic/system effects; and emergency records establish service restoration and coordination.

Claim boundaries are explicit. UNICEF output data are described as UNICEF reported reach or programme results. Government or JMP statistics describe Pakistan wide outcomes. An observed improvement in a UNICEF programme district is treated as evidence consistent with contribution, not proof of causation. Policy adoption is distinguished from implementation; budget allocation from expenditure; installed infrastructure from functioning service; improved water source from microbiologically safe water; and emergency reach from durable recovery.

3. Methodology and evidence hierarchy

The volume applies a Longitudinal Contribution and Impact Evidence Assessment. It combines portfolio reconstruction, trend analysis, theory based contribution analysis, process tracing, policy genealogy, systems analysis, equity analysis and a district level empirical screen. Quasi experimental language is used only where assumptions can be examined. The SPSP analysis is therefore presented as an empirical contribution case rather than a definitive difference in differences estimate because pretreatment trends differ, treatment intensity is incompletely observed and later programme exposure contaminates simple controls.

Evidence is prioritized in the following order: Government of Pakistan and provincial survey, policy, administrative and budget evidence; independent evaluations; harmonized international datasets such as JMP; multilateral and development partner evidence; UNICEF evaluations and country programme documents; and UNICEF annual or emergency reporting. Organizational sources are primarily used to establish what UNICEF did, when, where, with whom and at what scale. Population trends are anchored to independent sources wherever possible.

Contribution grades are not scores generated mechanically. Grade A denotes strong contribution evidence where timing, mechanism, geography, scale and independent corroboration align. Grade B denotes substantial contribution evidence, generally shared with government or partners. Grade C denotes plausible contribution where pathways are credible but competing explanations or evidence gaps remain important. Grade D denotes documented activity with uncertain outcome contribution. Grade E is reserved for mixed or contrary evidence. A strong systems contribution can coexist with weak population outcome attribution.

Part II: What Changed in Pakistan?

IN THIS PART

4. Sanitation improved substantially, but inequity remains severe

5. Drinking water access is not the same as safe water

6. Hygiene and institutional WASH expose the quality gap

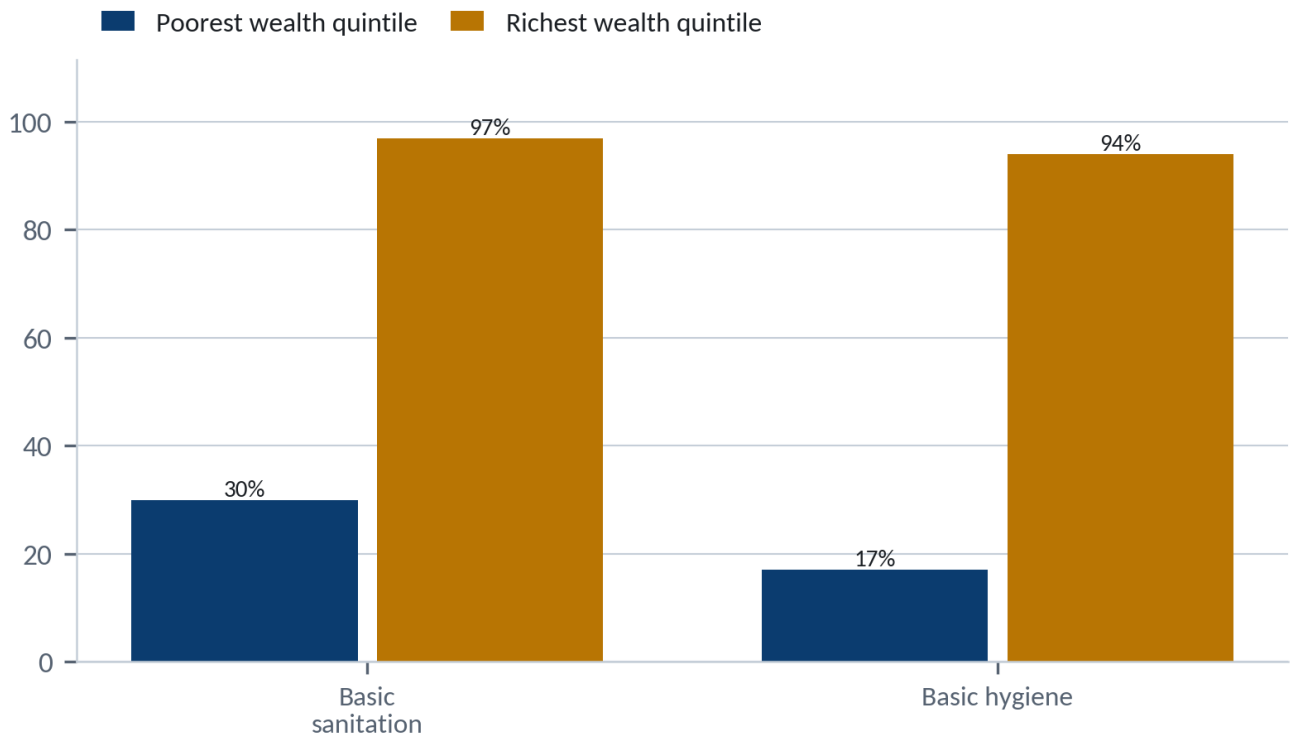
7. Repeated shocks changed the WASH trajectory

4. Sanitation improved substantially, but inequity remains severe

Sanitation is the strongest long run population trend in the WASH evidence base. JMP estimates show a large increase in use of at least basic sanitation and a substantial decline in open defecation between 2000 and 2024. The direction of change is clear even though service ladder definitions evolved over the period. This improvement matters for child health, dignity, safety and environmental exposure, but it should not be interpreted as uniform progress across geography or wealth groups. The 2024 estimate of about 72 percent using at least basic sanitation is reported in the UNICEF Data country profile (UNICEF Data 2026).

The inequality profile is severe. In 2018, the poorest wealth quintile remained far behind the richest in both sanitation and basic hygiene (WHO/UNICEF Joint Monitoring Programme 2023). This means that aggregate national progress increasingly concentrates the remaining challenge among populations that are harder and more expensive to reach: poor rural households, remote settlements, informal urban communities and locations exposed to recurrent shocks.

Figure 1 **Basic sanitation and basic hygiene by wealth quintile, 2018**



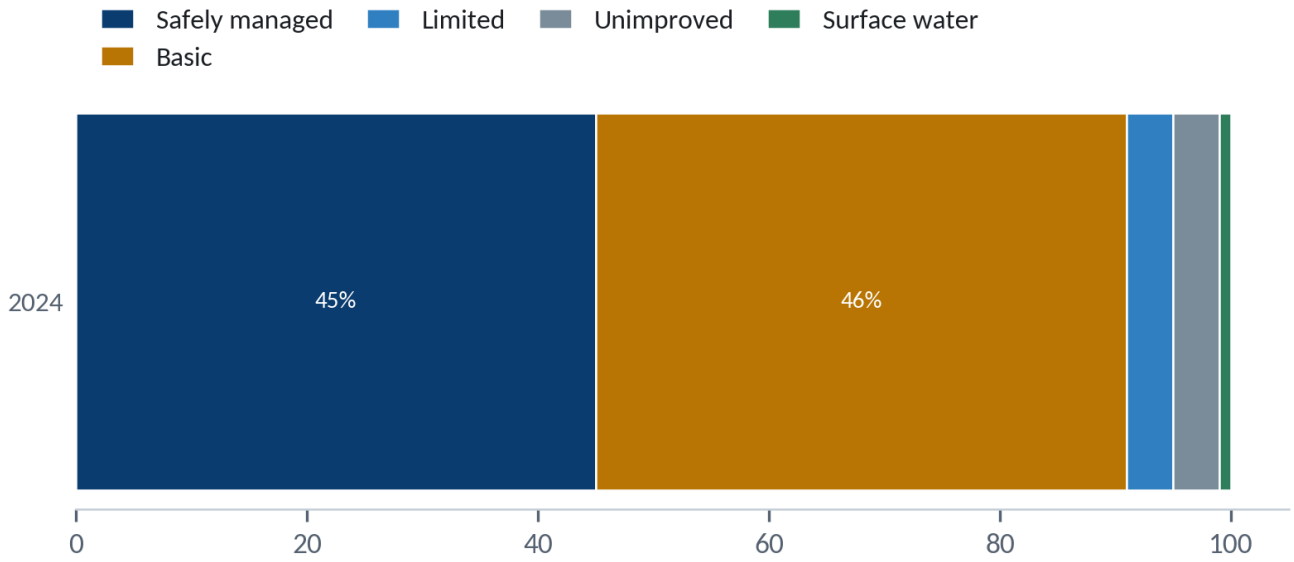
Source: WHO/UNICEF Joint Monitoring Programme (2023), inequality estimates from household survey data. The figure shows the scale of the wealth gradient, not UNICEF attributable change.

For contribution analysis, this distributional pattern matters in two ways. First, UNICEF often targeted deprived, flood affected or insecure locations, so simple comparisons with provincial averages can understate performance because programme areas start from more difficult conditions. Second, a national average can improve while exclusion deepens among specific groups. Future WASH accountability should therefore report both service levels and convergence: whether the poorest and most climate exposed populations are catching up.

5. Drinking water access is not the same as safe water

Pakistan has long reported comparatively high access to improved drinking water sources, but the service quality question is more difficult. Improved source classification does not establish microbiological safety, continuity, affordability, distance, climate reliability or household treatment. Government and UNICEF water quality work repeatedly highlights contamination risks, which means that a household can appear "covered" in an access statistic while remaining exposed to unsafe water.

Figure 2 Drinking water service levels in Pakistan, 2024



Source: WHO/UNICEF Joint Monitoring Programme (2025), as reported in UNICEF Data (2026). Percent of population.

This distinction is especially important when assessing UNICEF contribution. Water supply rehabilitation, filtration, solarization or source protection can create meaningful service improvements, but the appropriate outcome depends on the intervention. A water system project should ideally be assessed through functionality, hours of service, water quality, seasonal reliability, O&M financing and user access rather than simply the number of schemes installed or people nominally served.

The long run evidence is therefore strongest for sanitation, while drinking water contribution should be framed more selectively. Where independent water quality or functionality data are absent, the responsible claim is that UNICEF supported access or system improvements, not that safe water outcomes improved for the full reported beneficiary population.

6. Hygiene and institutional WASH expose the quality gap

Hygiene and WASH in institutions reveal a broader evolution in the sector from household access toward service quality. WASH in Schools approaches combined facility improvements with behaviour change, menstrual hygiene management, the Three Star Approach and integration of indicators into education management systems. WASH in health care facilities became especially salient during COVID-19, when infection prevention depended on functioning water, sanitation and hand hygiene in service delivery settings.

The public evidence supports a stronger system claim than an outcome claim. Integration of WASH indicators into management systems, development of strategies and facility upgrades can be documented. What is less consistently available is repeated independent measurement of functionality, maintenance, soap availability, water continuity and downstream attendance or health effects. For future programming, institutional WASH should be monitored as a service over time rather than as a one time infrastructure state.

7. Repeated shocks changed the WASH trajectory

The 25 year record cannot be understood without humanitarian shocks. The 2005 earthquake required large scale emergency water and sanitation provision and helped establish coordination experience. Conflict and displacement in 2009 created another service continuity challenge. The 2010 floods affected vast areas and became a turning point in sanitation programming, with recovery efforts incorporating total sanitation approaches that later fed into SPSP. COVID-19 shifted attention toward hand hygiene and WASH/IPC in schools and health facilities. The 2022 floods again damaged water and sanitation infrastructure at massive scale and pushed the programme toward climate resilient recovery.

These shocks complicate causal interpretation because they can both destroy services and trigger unusually large investment. A district may improve rapidly after reconstruction while simultaneously experiencing severe welfare loss. Conversely, an apparently weak programme trajectory may partly reflect repeated flood or displacement exposure. The assessment therefore treats shocks as both confounders and programme context variables, not as background events.

Part III: What Did UNICEF Contribute?

IN THIS PART

8. PATS and PATS Plus: the clearest catalytic pathway

9. SPSP: the principal empirical contribution case

10. Government scale up and public finance leverage

11. WASH in schools and health care facilities

12. Humanitarian WASH and transition from response to recovery

13. Climate resilient WASH and regulation

8. PATS and PATS Plus: the clearest catalytic pathway

The Pakistan Approach to Total Sanitation is the strongest example of a UNICEF contribution that operated through model development and government adoption rather than UNICEF only service delivery. PATS adapted community led sanitation principles to Pakistan and combined demand creation, sanitation supply, school/community approaches, hygiene behaviour and enabling environment components. Public documentation places its development in the late 2000s and its operationalization in post flood recovery and sanitation at scale programming.

The contribution pathway is visible chronologically. UNICEF supported work helped define and test the approach; SPSP expanded implementation; provincial governments increasingly mainstreamed sanitation strategies; and later PATS Plus incorporated sustainability and disaster risk reduction elements. UNICEF Pakistan's 2016 annual report documents strengthened government leadership, provincial PATS mainstreaming and scale up, including Punjab implementation and a Sindh allocation of approximately US$13 million for PATS in 13 districts (UNICEF Pakistan 2017:18 to 19).

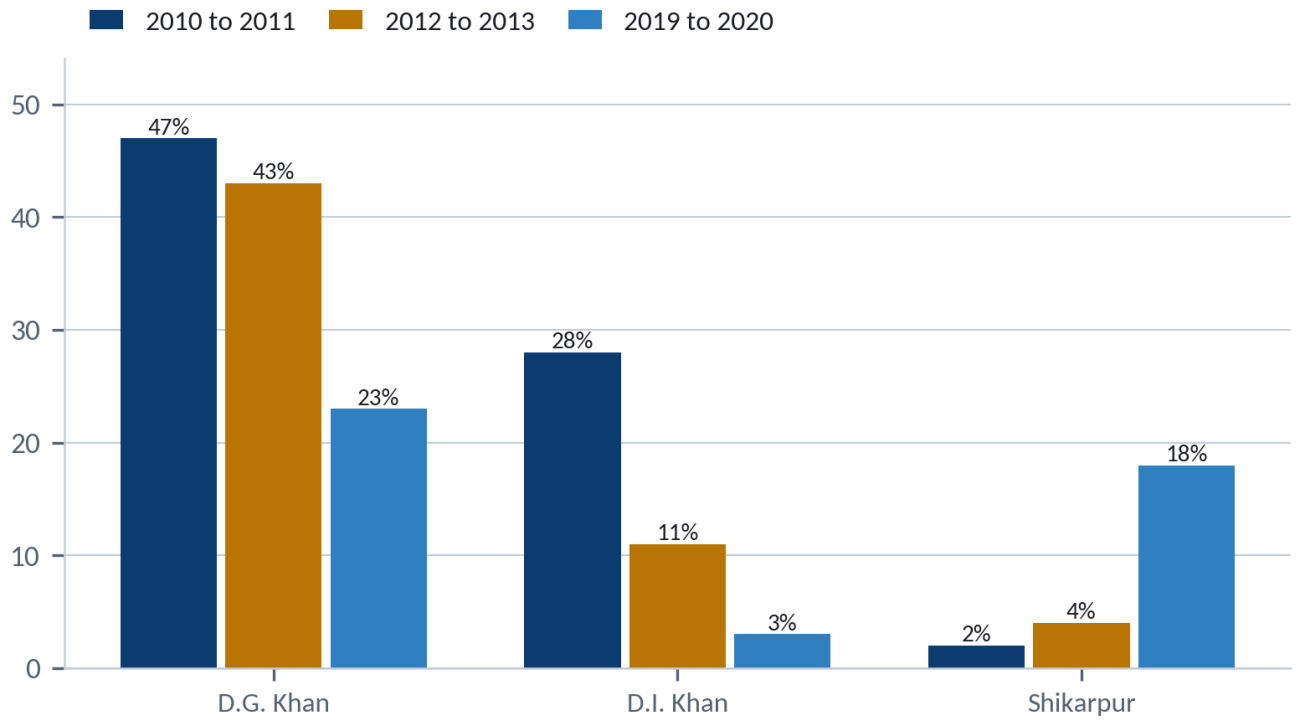
This evidence supports a Grade B catalytic/system contribution. It does not justify assigning national sanitation gains to UNICEF. The more defensible claim is that UNICEF helped develop, operationalize and diffuse an approach that government and partners subsequently implemented at larger scale. The unresolved question is sustainability: UNICEF's own 2023 to 2027 costed evaluation plan recognizes the absence of a national evaluation of how fully PATS was adopted and sustained (UNICEF Executive Board 2022).

9. SPSP: the principal empirical contribution case

SPSP Phase I is the best available case for testing whether programme exposure aligns with independently measured sanitation trajectories. The programme ran from February 2013 to March 2014, intended to reach about 1.3 million people and operated across 13 districts/agencies using PATS (UNICEF 2014). The technical evidence paper reconstructed district level PSLM observations for eight treatment districts and a set of candidate comparisons.

The pretrend evidence immediately limits a simple pooled causal design. Between 2010 to 2011 and 2012 to 2013, no toilet prevalence already fell sharply in Rajanpur and D.I. Khan, changed little in some other districts, and rose in Jacobabad. This violates the intuition that treatment districts were following a common trajectory immediately before Phase I. Treatment selection was also purposive: SPSP targeted vulnerable, flood affected and insecure populations rather than randomly selected districts.

Figure 3 SPSP districts: households reporting no toilet



Source: Pakistan Bureau of Statistics (2012, 2014, 2021), PSLM district tables. Values are district level descriptive observations for three of the eight reconstructed treatment districts, not causal effect estimates.

Long run results are heterogeneous. D.G. Khan and D.I. Khan improved strongly on the no toilet measure. Kashmore was broadly flat between 2012 to 2013 and 2019 to 2020. Shikarpur deteriorated from 4 percent to 18 percent despite showing an increase in flush toilet access by 2014 to 2015. These divergent outcomes are not a methodological inconvenience to be averaged away; they are evidence that programme effects depended on local conditions and subsequent trajectories.

The contribution judgment is therefore B/C by case rather than a single overall treatment effect. The intervention had a clear theory of change and verified geography, and several districts improved substantially. Yet different pretrends, later PATS/government programme overlap, shocks and incomplete subdistrict exposure make a pooled DiD estimate methodologically weak. The appropriate next step would be to reconstruct union council/village exposure and implementation intensity, then link those data to compatible outcomes where possible.

10. Government scale up and public finance leverage

The systems case strengthens where UNICEF supported approaches are connected to government decisions and domestic financing. The 2016 UNICEF Pakistan annual report records Punjab scale up that reportedly provided 1.8 million people with toilet access and a Sindh allocation of approximately US$13 million for PATS in 13 districts, alongside UNICEF support to human resource planning (UNICEF Pakistan 2017:19). A separate evaluation in cotton farming areas described UNICEF advocacy contributing to a government PC-1 and replication of PATS across Punjab.

This is credible evidence of influence and leverage, but not a clean fiscal counterfactual. Public finance claims should distinguish four stages: budget commitment, approved allocation, release, and actual expenditure. The available public evidence is strongest on commitment and programme adoption; it is thinner on executed recurrent expenditure and whether UNICEF support caused the budget decision. The external wording should therefore describe “documented public finance leverage and technical contribution” rather than “UNICEF generated government financing.”

11. WASH in schools and health care facilities

Institutional WASH illustrates how UNICEF's contribution shifted from standalone infrastructure toward standards, management systems and service quality. In schools, UNICEF supported national/provincial WASH in Schools strategies, the Three Star Approach, menstrual hygiene work and integration of WASH indicators into education management systems. These interventions create a potentially durable system effect because monitoring and standards can continue beyond a particular construction project. Programme reporting for 2018 is in UNICEF Pakistan (2019).

In health care facilities, COVID-19 created an accelerated WASH/IPC response. UNICEF supported reporting for June 2020 documents rehabilitation or installation of WASH facilities in 260 health care facilities within a wider sector response and training of frontline sanitary workers. The correct contribution claim is substantial emergency service/system support. A stronger health outcome claim would require evidence linking facility improvements to infection, quality of care or service continuity outcomes. Baseline evidence on WASH in health care facilities is set out in Government of Pakistan and UNICEF (2021).

The main planning lesson is that institutional WASH should move from "facility present" to "service functional." A future results compact should track water availability on the day of assessment, functional toilets by sex and accessibility status, soap/hand hygiene, waste management, menstrual hygiene provisions, maintenance responsibility and recurrence of service failure.

12. Humanitarian WASH and transition from response to recovery

Humanitarian WASH is one of the areas where UNICEF's direct service role is most visible. During the 2005 earthquake and later crises, UNICEF supplied or coordinated water treatment, sanitation, hygiene materials and emergency services. In the aftermath of the 2010 floods, sanitation recovery evolved into a more programmatic model through Rural Sanitation in Flood Affected Districts and subsequently SPSP. This sequence demonstrates a form of institutional learning: emergency delivery generated approaches that were adapted for development programming. Early emergency response is documented in UNICEF (2006).

The 2022 floods reopened the same challenge at a far larger scale. Emergency WASH reporting documents restoration and provision of services to affected populations, followed by increasing emphasis on rehabilitation, solarization, resilient designs, committees and handover. The contribution grade is B for humanitarian service delivery and coordination because these activities are well documented and closely aligned temporally with need. Durable impact remains less certain because follow up on long term functionality, household recovery and resilience is incomplete.

A useful accountability distinction is therefore response → restoration → durable service → resilience. UNICEF can credibly report the first two when outputs and service restoration are verified. The third requires sustained functionality. The fourth requires evidence that the service performs during a subsequent shock. Treating all four as a single "people reached" metric would obscure the progression from emergency action to resilient development.

13. Climate resilient WASH and regulation

Climate resilience became increasingly explicit after 2022. UNICEF's 2024 emergency reporting describes solarized systems, adapted designs for flood affected settings, water management committees and government handover. Annual reporting for 2024 to 2025 also documents large recent service reach figures. These outputs establish an expanding climate resilient portfolio, but the appropriate contribution claim is still primarily service/system level because the observation window is short. The reporting sources are UNICEF Pakistan (2025, 2026).

Regulatory work represents a different pathway. The joint Government to UNICEF WASH regulation assessment documents regulatory gaps and priorities, including development of frameworks to strengthen service accountability at national and provincial levels (Government of Pakistan and UNICEF 2023:53 to 57). This supports a B/C system contribution. Population effects are not yet the right test because regulatory changes require implementation, compliance, provider performance and time before household outcomes can reasonably respond.

Together, climate resilient infrastructure and regulation point toward a more mature sector role for UNICEF: less dependence on direct delivery and more emphasis on service standards, resilience, institutional accountability and government capability. Future evaluation should test whether this shift actually produces more reliable and equitable services, rather than assuming that policy sophistication translates automatically into performance.

Part IV: Attribution, Alternatives and Sustainability

IN THIS PART

14. Government is the principal causal platform

15. Other development partners and socioeconomic change matter materially

16. Sustainability: what appears embedded and what remains fragile

14. Government is the principal causal platform

Pakistan's WASH outcomes ultimately depend on federal, provincial and local government institutions. UNICEF can provide evidence, technical assistance, catalytic finance, demonstrations, supplies, coordination and advocacy, but government systems determine whether services are financed, staffed, regulated and maintained at scale. This is particularly true after devolution, when provincial differences in policy, implementation capacity and fiscal space became central to sector performance.

The contribution framework therefore treats government adoption as an outcome of catalytic support, not as evidence that UNICEF subsequently owns all downstream results. Where Punjab or Sindh scaled PATS, the resulting sanitation change is jointly produced. Where provincial budgets funded WASH, domestic public finance is itself a major causal input. This shared causality framing is essential for institutional credibility.

15. Other development partners and socioeconomic change matter materially

Major external investments overlap with UNICEF supported pathways. The World Bank approved US$442 million in 2021 for the Punjab Rural Sustainable Water Supply and Sanitation Project, while ADB's DREAMS project targets municipal services in Rawalpindi and Bahawalpur (World Bank 2021; Asian Development Bank 2024). NGOs, rural support programmes, bilateral partners and humanitarian actors also contributed to sanitation, water supply and hygiene over the period.

Broader socioeconomic changes also affect WASH outcomes. Household income influences the ability to build and maintain toilets; urbanization changes service economies and density; education and women's agency influence hygiene practices; demographic growth increases infrastructure demand; and climate shocks destroy assets while attracting reconstruction finance. National WASH trends therefore represent a combined result of public action, household decisions and structural change. UNICEF specific claims should be restricted to pathways where its role is documented.

16. Sustainability: what appears embedded and what remains fragile

Sustainability evidence is strongest where UNICEF supported approaches became part of government strategy, budget processes, routine information systems or formal institutional arrangements. PATS mainstreaming, WASH in Schools monitoring and emerging regulatory frameworks therefore have stronger sustainability potential than time limited output counts. Yet even institutionalization can be nominal: policy adoption does not guarantee budget release, staff capacity or implementation quality.

The weakest sustainability evidence concerns continued functionality and behavioural slippage. ODF communities require follow up; water schemes require maintenance and source protection; school and HCF facilities require recurrent supplies; and climate resilient infrastructure requires performance testing under future shocks. The lack of a national PATS sustainability evaluation is therefore not a minor documentation issue, it limits the strongest possible claim about a flagship sanitation approach.

For planning, sustainability should be treated as an explicit result measured after direct support reduces. A follow up at 12, 24 and 36 months would help distinguish short term adoption from durable service. This would also improve institutional learning by showing which government, financing and community conditions predict sustained performance.

Part V: Twenty-Five Years of Learning

IN THIS PART

17. What appears to have worked

18. Where results remain mixed

19. What could have been done differently

20. Priorities for 2026 to 2030

21. A proposed Safe & Resilient Environments measurement compact

17. What appears to have worked

The most consistent lesson is that technical approaches were more consequential when linked to government systems. PATS combined behaviour change with a scalable implementation model; SPSP tested scale; PATS Plus responded to sustainability and disaster risk concerns; WASH in Schools linked service expectations to institutional monitoring; humanitarian coordination enabled rapid response; and recent climate work links infrastructure with O&M and handover. These pathways are more durable than isolated delivery because they create rules, capabilities and financing relationships that can persist.

A second lesson is that learning across humanitarian and development programming can be productive. The 2010 flood response did not remain an emergency silo; it influenced sanitation strategy. The post 2022 portfolio similarly offers an opportunity to convert reconstruction into climate resilient service standards. This transition is not automatic, but it is one of UNICEF's comparative strengths when emergency operations are deliberately connected to sector reform.

18. Where results remain mixed

The district evidence cautions against assuming that a common programme model yields common outcomes. Shikarpur's deterioration on the no toilet measure, Jacobabad's weak immediate flush trajectory and the different pretreatment movements across SPSP districts show that local conditions matter. Possible explanations include uneven implementation intensity, household affordability, sanitation market depth, local government capacity, flooding, displacement, follow up quality and later programme overlap. Public evidence does not yet rank these explanations consistently.

Water quality is another mixed result. Access can be high while contamination persists. Institutional WASH can exist on paper while facilities are nonfunctional. Policy can be adopted while implementation remains weak. Budgets can be announced without recurrent O&M finance. These gaps between formal coverage and effective service are increasingly the central WASH challenge as Pakistan moves beyond basic access indicators.

19. What could have been done differently

The largest missed opportunity is evaluability. Historical programme records do not consistently preserve subdistrict exposure, implementation intensity, unit costs, comparison conditions or post project sustainability. This makes a 25 year retrospective dependent on district averages and organizational reach figures even when more rigorous inference would have been possible with better prospective data architecture.

UNICEF could also have institutionalized independent functionality and slippage checks more consistently. For sanitation, repeated ODF verification would reveal whether behaviour persisted. For water systems, functionality and quality testing would distinguish construction from service. For public finance, tracking approved budgets through releases and expenditure would make catalytic finance claims more credible. For regulation, provider compliance and consumer service outcomes should be specified from inception.

A more accessible digital archive of country programme records, intervention geographies, evaluations and monitoring products would also strengthen accountability. The early 2000s are materially harder to reconstruct than later periods. Long term institutional memory should be treated as a public good function of programme management.

20. Priorities for 2026 to 2030

1. **Shift from access to service quality.** Track water safety, continuity, functionality, accessibility and O&M alongside nominal coverage.
2. **Make sustainability measurable.** Require scheduled post support checks for ODF status, infrastructure functionality and institutional WASH.
3. **Institutionalize programme exposure data.** Maintain geocoded intervention registries with dates, intensity, partner, financing and target population.
4. **Track public finance through execution.** Link UNICEF policy/advocacy support to allocations, releases, actual expenditure and recurrent O&M.
5. **Design selected rollouts for causal learning.** Where phased delivery is operationally appropriate, prespecify baseline, comparison and analysis plans.
6. **Test climate resilience under shock.** Measure whether systems continue to function during subsequent floods, drought, heat and power disruption.
7. **Deepen equity analytics.** Report wealth, rural/urban, disability, gender and climate risk gaps alongside national averages.
8. **Strengthen institutional WASH.** Measure service functionality in schools and HCFs rather than infrastructure presence alone.
9. **Evaluate mature system approaches independently.** Prioritize a national PATS adoption/sustainability evaluation and publish methods and key data.
10. **Preserve evidence for future accountability.** Maintain an accessible longitudinal evidence repository with stable identifiers and source provenance.

Action matrix by time horizon

The matrix sequences the ten priorities. Grades are those of the underlying pathway in the Executive Contribution Ledger.

Table 4 Action matrix by time horizon

Priority	Lead actors	Immediate (next 12 months)	Medium term (1 to 3 years)	Longer term (3 to 5 years)	Evidence grade
1. Service quality	PHED; local government; UNICEF	Add continuity, microbial quality and functionality to scheme monitoring	Report safely managed access next to improved source coverage	Use service quality as the headline sector indicator	C/D (water); B (system)
2. Measurable sustainability	Provincial sanitation programmes; UNICEF	Schedule post support checks for ODF status and facility functionality	Run follow up at 12, 24 and 36 months	Publish slippage rates by district	B (PATS); evidence incomplete
3. Programme exposure data	UNICEF country office; provincial planning units	Define a geocoded intervention registry: dates, intensity, partner, financing	Apply it to all new programmes	Link to compatible outcome data	Design decision
4. Public finance through execution	Finance and planning departments; UNICEF	Track allocation, release and expenditure for PATS type budgets	Add recurrent O&M lines	Evaluate whether advocacy altered budget decisions	B/C
5. Causal learning in rollouts	UNICEF; provincial governments; evaluators	Pre specify baselines and comparison groups where rollout is phased	Reconstruct union council exposure for SPSP	Estimate effects where assumptions hold	B/C by case
6. Climate resilience under shock	Provincial authorities; UNICEF; development banks	Record service continuity during floods, heat and power disruption	Test solarized systems through a second shock	Embed resilience standards in design codes	B (service); emerging

Priority	Lead actors	Immediate (next 12 months)	Medium term (1 to 3 years)	Longer term (3 to 5 years)	Evidence grade
7. Equity analytics	Bureau of Statistics; UNICEF	Report wealth, rural and urban, disability and climate risk gaps	Track whether the poorest quintile converges	Target the hardest areas	C
8. Institutional WASH	Education and health departments; UNICEF	Assess water, toilets, soap and waste on the day of visit	Fix maintenance responsibility	Link to attendance and infection outcomes	B (provisional)
9. Independent evaluation of PATS	UNICEF Evaluation Office; provinces	Commission a national PATS adoption and sustainability evaluation	Publish methods and key data	Use findings in the next programme	B
10. Evidence repository	UNICEF; archives; partners	Create stable identifiers and provenance for records	Digitize early 2000s records	Maintain as a public good	Not applicable

Source: Author synthesis of the evidence reviewed in this report

21. A proposed Safe & Resilient Environments measurement compact

Table 5

1. A proposed Safe & Resilient Environments measurement compact

Domain	Core measure	Why it matters
Household sanitation	Basic/safely managed service + no toilet/open defecation + slippage	Separates coverage from sustained behaviour
Drinking water	Source, continuity, microbial quality, affordability, functionality	Avoids equating improved source with safe service
Institutional WASH	Functional water, sex separated accessible toilets, soap, waste systems	Measures actual service in schools/HCFs
Equity	Wealth, rural/urban, disability, climate risk and subdistrict gap	Tests whether remaining exclusion is narrowing
Programme exposure	Geocode, dates, intensity, population, partner, cost	Enables credible contribution analysis
Public finance	Allocation, release, expenditure, recurrent O&M	Tests whether policy influence becomes funded implementation
Resilience	Service functionality during/after subsequent shock	Makes climate resilience empirically testable
Systems	Policy implementation, regulator performance, data use, workforce capacity	Tests institutionalization rather than paper adoption
Sustainability	12/24/36 month functionality or ODF follow up	Distinguishes adoption from durability

Source: Author synthesis of the evidence reviewed in this report

Conclusion

Pakistan's WASH trajectory over 2000 to 2025 combines substantial sanitation progress with persistent inequality, unresolved water quality concerns and repeated disruption from humanitarian and climate shocks. The population trend is real, but its causes are distributed across government investment, household action, partner programmes, socioeconomic change and reconstruction. UNICEF should therefore not be credited with Pakistan wide WASH change as if it were a single programme result.

The evidence supports a more specific and defensible conclusion. UNICEF made a substantial catalytic and systems contribution through PATS/PATS Plus, sanitation at scale programming, provincial policy and planning support, institutional WASH, humanitarian response, selected public finance leverage, emerging climate resilient service design

and regulatory strengthening. The strongest claims concern mechanisms and institutional changes that can be documented. The SPSP district analysis is consistent with programme contribution in several places but is too heterogeneous for a single pooled causal estimate.

The strategic challenge for 2026 to 2030 is to convert these institutional gains into reliable, equitable and shock resilient service. That requires measuring what historically has been hardest to see: functionality after support ends, safe water rather than source type, ODF slippage, executed finance, climate performance and the exact geography and intensity of programme exposure. Building those measures into programme design would allow a future 10- or 25 year assessment to make stronger causal judgments with less reliance on retrospective reconstruction.

For an independent evidence initiative, the accountability value lies precisely in calibrated claims. Where evidence is strong, the volume identifies a substantial UNICEF contribution. Where evidence is shared, incomplete or contrary, it says so. That approach is more useful for future planning than either promotional attribution or adversarial judgment because it clarifies which mechanisms appear to have worked, which remain fragile, and which evidence gaps UNICEF and government can address prospectively.

Annex A: Contribution grading and external use rules

Table 6 Annex A: Contribution grading and external use rules

Grade	Meaning	External use rule
A	Strong contribution evidence	Use only where UNICEF role, timing, mechanism and corroboration are directly evidenced; do not extend beyond evaluated result.
B	Substantial contribution evidence	Use with explicit acknowledgement of government/partner joint contribution and relevant caveats.
C	Plausible contribution	Use as contextual or contribution consistent finding; avoid headline attribution.
D	Activity documented; outcome contribution uncertain	Use only to describe what UNICEF did, not what changed because of it.
E	Mixed or contrary evidence	Present openly as a learning finding; do not minimize divergent outcomes.

Source: Author synthesis of the evidence reviewed in this report

For population level claims, national or provincial outcome change and UNICEF contribution must be evidenced separately. A government or JMP trend verifies the outcome, not UNICEF's role. A UNICEF programme report verifies activity, not independent impact. External ready Grade A/B claims therefore require both a pinned result source and a documented UNICEF specific contribution pathway.

Status of the verification gate. Of the 10 Tier 1 WASH claims in the cross series ledger, five have cleared the external use gate with calibrated wording (PATS institutionalization, SPSP Phase I, domestic financing leverage, WASH in health care facilities and WASH regulation), two are conditional on pinning an exact source location (humanitarian and climate resilient WASH), and three are on hold (the open defecation decline, provincial sanitation policies and WASH in schools institutionalization). The WASH in Schools grade is therefore provisional until the education management information system source is pinned, and national sanitation and open defecation trends are used as context only.

Annex B: Core source register

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Annex C: Relationship to the technical WASH evidence paper

This volume is a synthesis product. Its detailed technical WASH study contains the fuller intervention inventory, historical phase reconstruction, district sanitation screen, methodology, policy timeline, limitations and extended source register. That study and related analytical files are maintained as supporting documentation and are available on request. The present volume selectively uses the claims that survived the cross report credibility audit and Tier 1 source verification process.

The detailed technical evidence study is supporting documentation rather than a separate document that senior readers are expected to absorb. Where further technical review is required, the intervention inventory, PSLM district panel and verified Claim Evidence Contribution Ledger can be made available to reproduce and interrogate the principal findings.

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About the Team and Collaborators

Ahmad Nadeem, The Principal Investigator

Ahmad Nadeem is a development professional with 25 years' experience in programme implementation, communication, resource mobilization, research and AI integration. He has led donor funded projects, helped organizations secure funding and advised on implementation. His work has involved the World Bank, European Commission, ILO, UNICEF, UNDP, UN Women, OHCHR, USIP, GCF, KfW, Government of Italy and the Canadian High Commission. At the Pakistan Poverty Alleviation Fund and the Pakistan Centre for Philanthropy, he engaged, advised and supervised a wide range of development sector organizations, including charities, microfinance institutions, private universities, NGOs and INGOs, and worked with government bodies such as the Federal Board of Revenue, NACTA and social welfare departments. He has also worked on projects involving parliamentarians, law enforcement agencies, the National Police Bureau, police training colleges and churches. He is visiting faculty at Quaid-e-Azam University and SZABIST, holds an MPhil (Gold Medal, Iqra University) and a certificate (LUMS, McGill), and leads CSADS and Manāra.

Centre for Social Analytics and Development Support (CSADS)

The Centre for Social Analytics and Development Support (CSADS), established in 2023, is a research and advisory centre that uses artificial intelligence to generate evidence for informed policy, programme and strategic decisions. It serves public institutions, private sector organizations, UN agencies, INGOs and other development stakeholders, and makes research accessible to the media, students, parents and communities. It also helps organizations adopt AI responsibly, combining credible sources, transparent methods, human expertise and ethical safeguards. Within the Series, CSADS leads research design, source verification and final quality assurance. www.csads.org

Manāra Policy and Practice

Manāra is a strategic design and advisory practice that bridges evidence and action across critical development and institutional challenges. It works globally at the intersection of government, development organizations and the private sector, where efforts converge to generate social impact, mobilize capital and advance equity. Through policy analysis, systems thinking, strategic design, development finance advisory and public communication, it delivers solutions grounded in rigorous research, contextual realities and international best practices. www.manarapolicy.com

CivicFrames

CivicFrames is a creative knowledge communication initiative founded by Danyal Nadeem, a student of media sciences and an aspiring storyteller. It translates credible research into accessible creative forms, bridging the gap between data and public understanding. It explores how evidence can reach people through music, poetry and stories. Danyal intends to learn how creative formats can help evidence travel. Within the Series, it helps make findings easier to understand and share. www.civicframes.org