



WASH CHALLENGES & LOCALISED SOLUTIONS IN FLOOD AFFECTED REGIONS IN PAKISTAN

AN EXPLORATORY RESEARCH STUDY



Study Abstract has been accepted for the 2024 UNC Water and Health Conference: Science, Policy, and Practice. The Water Institute received a record-breaking number of abstracts in 2024 for their extensive peer-reviewed selection process. After completing the double-blind peer-reviewed process, the study abstract submitted with the titled, Rethinking Climate Resilient Sanitation: A Participatory Exploration of Climate Impacts on Rural sanitation in Pakistan, has been selected for a Poster presentation at this year's Conference.

Credits

Title of the study: **WASH Challenges and Localised Solutions in Flood Affected Regions in Pakistan: An exploratory research study**

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LIST OF ABBREVIATIONS

- ▶ CSO – Civil Society Organisation
- ▶ DRR – Disaster Risk Reduction
- ▶ FGD – Focus Group Discussions
- ▶ IW – Interactive Workshop
- ▶ KII – Key Informant Interview
- ▶ KP – Khyber Pakhtunkhwa
- ▶ NGO – Non-Governmental Organisation
- ▶ NI – Narrative Interview
- ▶ PDMA – Provincial Disaster Management Authority
- ▶ UC – Union Council
- ▶ WASH – Water Sanitation and Hygiene



Foreword

In the face of increasing climate induced disasters, Pakistan needs comprehensive and effective WASH services during disasters, especially floods and earthquakes. The floods of 2022 are a horrifying nightmare for millions across the country who lost everything to it. Islamic Relief being the leading humanitarian responder in the aftermath of the emergency reached 1.5 million people with lifesaving aid including food, water, shelters, hygiene and sanitation items, cash assistance and now with ongoing recovery and rehabilitation efforts in different areas.



Learning from the super floods of 2022, communities in the provinces of Sindh and Khyber Pakhtunkhwa faced unimaginable challenges especially hygiene and sanitation, hence making it an urgent issue. I strongly believe that amidst the chaos and devastation wrought by disasters, the provision of adequate WASH services—comprising water, sanitation, and hygiene—is not just a matter of convenience, but a fundamental necessity for safeguarding public health and ensuring human dignity.

Islamic Relief was quick to address the WASH needs and contribute towards restoring dignity through hygiene kits for women and girls. We also built handwashing stations and made pit latrines for the local communities to address the issues arising from collapsed sanitation infrastructure and heightened risk of waterborne diseases.

In addition to our on ground work, IRP is playing a pivotal role in generating knowledge and amplifying the voices of the unheard. IRP's this recent research report "Ensuring WASH Services during Monsoon Floods in Khyber Pakhtunkhwa and Sindh, An Exploratory Study on the Impact of 2022 Floods" unfolds the challenges faced by people in the aftermath of floods 2022, particularly concerning WASH services.

Through the lens of this study, we have tried to explore the complex interplay between climate change induced disasters, socio-economic factors, and institutional responses to meet the WASH needs of affected communities.

As we embark to learn and redefine our emergency response, let us be guided by the commitment to ensure that no one is left behind in the quest for clean water, safe sanitation, and dignified hygiene, even in the face of biggest disasters.

EXECUTIVE SUMMARY

Pakistan is ranked among the top five countries vulnerable to climate-based disasters according to global climate risk index. Over the years, torrential rains have caused flooding in several different parts of the country, claiming lives and damaging property. People from marginalised and vulnerable groups disproportionately carry the consequences of such disasters. This study investigates the challenges faced by the people in Sindh and Khyber Pakhtunkhwa (KP) in the aftermath of the 2022 floods concerning water, sanitation and hygiene (WASH) needs. The focus of this exploratory participatory study is to understand the experiences of the flood-affected populations across three districts, namely Malir (Sindh), Dadu (Sindh), and Nowshera (KP), heavily impacted by the floods and hosting displaced populations. This study undertakes an in-depth assessment of the challenges - as well as localised solutions - to comprehend the accurate scale of the impact of the floods in Pakistan on the communities affected and the associated support needed.

This report summarises the key insights from participants' experiences of the 2022 floods and highlights the need to design intersectional initiatives. The findings suggest the importance of considering gender, age, and ability to co-create resiliency systems for WASH programs in flood-affected and other emergency settings. While emergency responses in Pakistan may have provided initial access to important WASH services, a more nuanced understanding of local contexts, cultural and indigenous practices, and a diverse lived experience lens is necessary for designing effective solutions that are more likely to sustain while communities prepare to return to their homes.

There have been many volunteer and citizen-led support interventions for flood-affected communities, as well as some relief efforts by the government. However, though well intentioned, these only offer short-term and inconsistent aid. They do not provide systematic insight into communities' WASH needs, nor are services and products contextualised to the environmental or cultural nuances of those impacted. Recovery efforts must be inclusive and guided by community-led solutions to WASH challenges to create resilient and sustainable ecosystems that can be upheld by those affected and help inform key service providers. The intersection of social class, economic marginalisation, gender, and climate change is not adequately addressed by current solutions focusing on physical infrastructure or health outcomes. To improve the well-being of climate-displaced populations, we need to understand their context and socio-economic realities. This report takes the opportunity to highlight the WASH context as explained by the stakeholders and shares the recommendations and local practices for building resilience.

INTRODUCTION

Pakistan is ranked as one of the most vulnerable countries to the impacts of climate change, which are widespread and cross-sectoral [Khan et al., 2021]. Unprecedented rainfall in 2022 resulted in devastating floods across the country, leaving millions of people homeless and infrastructure destroyed. According to the National Disaster Management Authority [2022], these catastrophic floods affected nearly 33 million people across Pakistan. However, the consequences of this calamity are disproportionately devastating for marginalised populations, such as women, children, older adults, and people with adverse health conditions. The World Bank Group [2022] estimated that these floods displaced nearly eight million people, causing a compounded social, economic, and health crisis. More than 89,000 people remain displaced in the province of Sindh as of the start of the year 2023, i.e more than half a year after the floods [Centre for Disaster Philanthropy [CDP], 2023]. Khyber Pakhtunkhwa [KP], another province heavily impacted by the 2022 floods, faces continued challenges with damaged water systems and affected populations reliant on contaminated water from ponds and wells [CDP, 2023].

Climate disasters in underserved settings, such as Pakistan, can have significant long-term impacts that further perpetuate inequities and inequalities. An early assessment report highlighted that across country “1,346 water and sanitation schemes have been fully destroyed, while 5,714 are partially damaged, requiring major repair and rehabilitation” [PDNA, 2022]. The report further outlines the need to assess the indirect impacts such as health, education and socio economic challenges due to the lack of water and hygiene facilities on the affected populations. Although relief efforts have existed during the floods, the majority of them have been short-term, inconsistent, and lack a special focus towards compromised WASH needs and rehabilitation.

Keeping the severity of the situation in mind, a pressing need was identified to comprehensively evaluate the direct impacts including water born diseases, malnutrition, personal hygiene and sanitation issues due to compromised WASH facilities on the well-being of flood-affected and displaced populations. The purpose of this research was not only to understand challenges endured by the flood-affected but also to build a guide for localised solutions and develop pre/post-disaster management strategies relevant to local contexts and people’s socio-ecological and economic realities. This was achieved by:

- ▶ assessing the impact of floods on the local and displaced communities and the support/assistance needed; and
- ▶ gaining insights from local stakeholders involved in the flood response via identifying efforts, understanding challenges, and listing recommendations for resilient WASH systems.

GEOGRAPHICAL SCOPE

In order to gauge the impacts of the 2022 floods on displaced communities in Sindh and KP, an exploratory qualitative study was conducted across three districts:

- ▶ Malir [Sindh]
- ▶ Dadu [Sindh]
- ▶ Nowshera [KP]

The rationale for choosing these districts was that both Sindh and KP suffered immense WASH infrastructure losses, and the aforementioned districts hosted a considerable number of flood-affected persons [UN OCHA Situation Reports, 2022]. A scoping exercise was done before the recruitment of participants to identify suitable Union Councils and neighbourhoods for the study.

District Malir:

The Deputy Commissioner of Malir District established temporary encampments to accommodate more than 500 families affected by the floods across Sindh and Balochistan, who suffered from adverse sanitation and hygiene conditions [Ansari, 2022]. Sindh's Provincial Disaster Management Authority [PDMA] reported that 5,132 internally displaced persons utilised the tent city established in the Malir District [March 2023]. As of December 2023, the research team has observed a significant decline in the number of people residing in these tents. Tent City - located in the UC Gaggarpathak, Malir - once housed thousands of tents, now holds roughly 200 - 250 tents, keeping only those with no support or means to return to their homes or lands. As the Government of Sindh struggles to sustain the temporary encampments, residents in Tent City are now discouraged from staying on the premises. This location was selected for the study to understand the impacts on populations in such encampments.



Aerial view of submerged areas of Malir

District Dadu:

Dadu, located in the west of the Indus River in Sindh Province, bore the brunt of catastrophic flooding in 2022, where approximately 600 villages were submerged [Dawn, 2022]. Dadu District, with a population surpassing 1.5 million residents, is divided into four tehsils: Dadu, Johi, Khairpur Nathan Shah, and Mehar. This district faced heavy impacts from both floods in 2010 and 2022. Among these Tehsils, Johi, a cluster of villages predominantly occupied by a vulnerable rural population, was severely affected due to its close proximity to Pakistan's largest natural freshwater lake, Manchar Lake. Villages in Johi remained submerged for many months after the flooding, which led to extensive infrastructure damage, including deprivation of critical WASH facilities and was thus selected for this study [Brecorder, 2022].



Aerial view of submerged areas of Dadu

District Nowshera:

Residents of District Nowshera previously weathered a flooding disaster in 2010 when 68 out of 453 settlements were inundated, and 500,000 people were displaced due to flash floods [Pakistan: District Nowshera Flood Risk, 2012]. Nowshera was once again one of KP's most severely affected districts during the 2022 floods. In contrast to hosting flood-displaced people from elsewhere, Nowshera District faces the challenge of rehabilitating 250,000 people from 53 villages across the district [Nabi, 2022]. The district of Nowshera is divided into three tehsils: Jahangira, Pabbi, and Nowshera. Data for this study was largely collected from the Nowshera tehsil, which has a population of over 700,000 people - housing a major chunk of the flood-affected population, with many needing rehabilitation support.

METHODOLOGY

Study Objectives

The objectives of this research study were:

- ▶ To understand the impact of the 2022 floods on access to and utilisation of sanitation and hygiene facilities
- ▶ To outline current local practices (by communities, local governments, and civil society organisations) addressing challenges caused by floods
- ▶ To identify avenues for building strength and resilience concerning WASH programming among local stakeholders

Study Design

This exploratory study employs a participatory qualitative research approach steeped in arts based and narrative mediums from an intersectional lens. Participatory qualitative research is a powerful tool for understanding individuals' and communities' lived experiences and perspectives [Creswell, 2013]. We conducted Interactive Workshops [IWs] utilising various participatory arts techniques embedded in the Theatre of the Oppressed methodology. These included Interactive Theatre, Storytelling via Objects, the Living Newspaper Game, and the Great Game of Power. The goal of these activities was to facilitate dialogue, collaborate, and co-create knowledge assets to understand the outlined study objectives. A review of the literature, reports, and news sources helped guide the design of the probes and prompts utilised during the interactive group discussions. In addition, Focus Group Discussions [FGDs] and Key Informant Interviews [KIIs] were conducted with local government stakeholders and civil society representatives. Narrative Interviews [NIs] with socially marginalised persons were conducted to understand the impact of floods on WASH services for vulnerable groups.

In the context of this study, vulnerable groups are defined as those facing further marginalisation due to their gender, physical, social, or economic status.

All FGDs and participatory IWs were held in safe communal spaces. Venues were chosen considering their proximity to the selected communities in Dadu, Nowshera, and Malir Districts. Moreover, the accessibility of the locations for the participants was given prime significance. The study team ensured via scoping that venues were suitable for conducting the sessions and discussions. FGD and interview guides were developed in local languages. All data collection and engagement was conducted in Urdu, Sindhi, or Pashto, with facilitation aid from local community field workers. After taking consent from respondents, interviews [NIs and KIIs] were held at the participants' residence, place of business and other communal spaces as per their convenience and safety.

Participant Sampling and Recruitment

Adopting a socio-ecological approach, three stakeholder groups each from districts Malir, Dadu, and Nowshera were engaged through this study.

- ▶ Group 1: Men and women with lived experiences of 2022 floods
- ▶ Group 2: Local grassroots leaders or advocates
- ▶ Group 3: Civil society representatives and relevant local government stakeholders

Given the exploratory and qualitative nature of the study, participants were recruited through snowball and convenience sampling. The study tapped into IRD's [consultant] pre-existing community and partner networks to reach participants from all three identified stakeholder groups. Employing a chain referral mechanism resulted in accessing individuals with similar experiences who could provide in-depth insights. Moreover, we were cognizant that flood displaced populations are hard to reach and not well-documented or visible. Therefore, probability sampling was not opted to reach the desired sample in this case. Lastly, this exploratory study aimed to reach specific sub-groups within the identified districts [those impacted or displaced by the 2022 floods, those among the first responders, and rehabilitation personnel]. Utilising a snowball approach, focal persons were identified first, who were then referred to other participants.

119 participants across three study sites were recruited for participation. A smaller sample size was chosen based on the literature on qualitative research, which emphasises the quality of data rather than its quantity. A small sample size allowed for an in-depth exploration of individual experiences and perspectives, contributing valuable insights to the research. The participants were divided as per the following inclusion criteria:

Participant Group	Inclusion Criteria
Group 1: Men and Women with lived experiences	2022-flood displaced/affected persons residing in the selected districts above 16 years of age
Group 2: Local grassroots leaders	A resident of the selected districts above 25 years of age An active member of the local community
Group 3: Civil society representatives and relevant local government stakeholders	Active participant in the 2022 flood relief/rehabilitation efforts in the selected districts Above 25 years of age

Table 1: Inclusion Criteria for Participants

Participant Profile

People with Lived Experiences:

To gauge the first-hand experience of the 2022 floods, interactive workshops (IW) were separately held with men and women with lived experiences in each district, supplemented with narrative interviews (NI) of those who were the most vulnerable and were unable to attend the workshop. Workshops were attended by a diverse population in terms of age, ranging from 17 to 70-year-olds for women and 21 to 80-year-olds for men.



A photo of displaced community living in temporary shelters

Most of the women workshop participants in Malir District constituted housewives, while very few of them were involved in crafting work, like sewing or embroidery, to cater for their livelihood needs. Many of the male participants were unemployed or were relying on daily wages, an unstable source of income. All participating men from this subgroup were either farmers/ labourers in their native villages who did not have assets, such as lands, and were under huge debts to the landlords. Only those participants with no homes, lands, or resources to return to were residing in the Tent City. Therefore, during both workshops and interviews, all participants highlighted their preference of living in the city now onwards, instead of their native regions. Participants recruited for the NI were the most vulnerable across the three districts, including people with physical disabilities and elderly folk (in their 60s, 70s or 80s).

Contrasting to Malir, workshop participants from the Dadu and Nowshera districts belonged to diverse professions. Women participants were social workers, councillors, volunteers, teachers,

farmers, seamstresses, and housewives, while men were farmers, labourers, social workers, students, media reporters, carpenters, drivers, and landlords. While the displaced population preferred to stay in the Malir District, most participants in the Dadu and Nowshera districts - despite being displaced for a short period - went back to their homelands and mentioned their preference for living in their native lands. This motivation lies in the fact that most of the people residing there either owned a patch of land or some level of support, enabling them to sustain themselves.

Grassroots Leaders, Civil Society & Govt. Representatives:

Local grassroots leaders, nongovernmental organisation (NGO) representatives - such as Health and Nutrition Development Society (HANDS), Pakistan Red Crescent Society (PRCS), National Rural Support Program (NRSP), Family Planning Association of Pakistan (FPAP), Sarhad Rural Support Programme (SRSP), Sujaag Sansar Organisation (SSO), Marie Stopes Society (MSS) and local government personnel (including WASH engineers, supervisors, district field coordinators, community mobilisers, and health workers) formed the majority of participants for the Focus Group Discussions (FGDs) and Key Informant Interviews (KIIs) across each district. All these stakeholders had extensive ground level experience of the 2022 floods in the domains of health, nutrition, and WASH. Stakeholders in Malir District had worked across the regions of Karachi (including Malir), many areas of Balochistan (leading from Lasbela to Sibbi), and Sindh (such as Naseerabad and nearby regions). Those from Dadu and Nowshera districts also had significant relief and rehabilitation contributions in their localities and nearby regions. The stakeholders ranged from various age groups, including those in their early 20s to those in their 50s.

STUDY FINDINGS

Aftermath of the 2022 Floods – A General Overview

The devastating floods in 2022 led to catastrophic and multi-sectoral destruction of property and infrastructure, causing mass displacement and disruption of life for those affected. It was observed in the three study districts – Malir, Dadu, and Nowshera – that the most vulnerable

populations were those without a reliable shelter, that is, those having kacha housing [houses made of mud and straws]; they suffered through their homes and livelihoods being destroyed. As their belongings had been compromised, the displaced population had to endure weeks or even months of food insecurity, with limited, or no, access to safe drinking water,



A photo of respondents during field visit

sanitation facilities, and essential health services. The 2022 floods caused an upheaval of the impacted communities' economic, health, education, and social systems.

Populations in all three districts in the study were displaced; however, their return to their homes and villages differed. In District Nowshera, most people left their homes only for a couple of weeks before returning, while in District Dadu, it took residents a couple of months to return. On the other hand, flood-affected populations have been residing in District Malir for over one and a half years with no concrete plans to return to their respective villages within rural Sindh. The difference in terms of returning to their homes was attributed to the fact that most houses in Nowshera were pakka housing [made of bricks/concrete], a step taken as a response after the 2010 floods, which significantly reduced the impact of floods in the area as compared to Sindh. Regarding Dadu, those who owned some land chose to return in hopes of rebuilding their lives, unlike the communities residing in temporary encampments in District Malir, who had nowhere left to go.

Other significant factors impacting continued displacement due to floods pertain to permanent loss of livelihoods, economic difficulties, general destruction of infrastructure, and delayed rebuilding processes. The findings below highlight the specific impact of the 2022 floods on the water, sanitation, and hygiene [WASH] facilities, further compounding the continued challenges flood-affected communities face.

Impact on Access to WASH Facilities

Water, sanitation, and hygiene (WASH) facilities and services were severely impacted in the immediate aftermath of the 2022 floods across all three districts. However, it must be noted that WASH infrastructure in District Dadu was struggling, especially in the remote rural areas – even prior to the floods. This entailed only having access to pit latrines without sub and superstructure, enclosed only through haystacks for privacy. Study participants highlighted that within rural regions of District Dadu, only an informal WASH infrastructure at the household level existed, even before the floods. They referred to using hand pumps in the villages to collect water for house use and storing it in containers to avoid making several trips. Make-shift toilets were commonplace in villages away from the main peri-urban hubs. Challenges around access, therefore, emerged from the fact that these WASH facilities were severely destroyed as most of the villages were submerged under water for several months. Accessing WASH infrastructure became even more difficult for groups with lesser mobility, such as those with physical disabilities, elderly, and women with children. With many functional toilets or latrines nearby being flooded, meant that people needed to travel distances to find toilets. Moreover, there were concerns around safety for women. This resulted in open defecation in the rural flood-hit areas contributing to further waterborne diseases. Male study participants expressed that they were at least able to use damaged roads and boats to go to drier places to use toilets. In this case the public toilets along with the private ones at hospitals, mosques, and shops were made available to the affected population.

Malir District's appointed temporary encampments provided proper WASH facilities at earlier stages of hosting displaced communities. These facilities included clean drinking water, accessible toilets with running water supply, and spaces to wash hands, clothes, and utensils. Participants recounted having running water supply lines and toilets with proper structures, inclusive of flushing mechanism attached to simplified sewerage systems taking the waste out of the camp site. Moreover, safety concerns were answered with toilet doors that could be locked by the user. However, with time, the services ceased functioning as per the needs of the population residing there. Given that the populations these displacement camps were hosting were not used to using toilets with drainage, maintenance became a running challenge for the local government organisers. Populations residing in the temporary camps were used to of pit latrines without the flushing mechanism, without proper guidance on use, toilets were often left unclean and unfit for use. Volunteers and CSO's representatives shared that since people were not educated or guided on how to utilise the facilities, the deterioration rate was much faster than anticipated. This included often clogged toilets, doors being broken, and damage to water stations when kept unsupervised. Over time, with the government's change in policy of not keeping the camps functional, the water supply lines and other utilities were withdrawn, contributing to the difficulties for the displaced populations. Since the toilets have ceased functioning, men resort to either open defecation in the nearby forest or go into town to use publicly available toilets. The women with the help of men have made pit latrines nearby the encampment that they use. Women also now have to travel distances to the water distribution plants to fetch water for cooking and cleaning, which they then store in open buckets. The current challenges continue



Team IRP conducted hygiene awareness session with the community

to be around accessing water for cleaning and toilet use as well as for washing and cooking purposes.

The pre-flood situation in Nowshera District was comparatively better concerning WASH facilities. Many households within the villages had access to their own water wells connected with water pumps to draw out the water as needed. The toilets in most households were also constructed with proper sub and superstructures. The Pakka housing in District Nowshera, post-2010 floods, enabled communities to invest in WASH infrastructures with the help of their local governments and CSOs. The access challenge was faced only during the weeks in which communities had to relocate to avoid flooding. However, the strong communal system provided men access to public toilets in hospitals, mosques, and other places. Women were accommodated by either their relatives that they stayed with or by members of the communities near their temporary camps. In the cultural set-up of the Nowshera District, women observe 'Purdah' (avoiding contact and presence of men, a woman is not related to by blood); the community, therefore, organised itself so that it could facilitate the affected women by sharing toilets within private homes of nearby community members. In the immediate aftermath of the floods, the challenges for communities in Nowshera were around clogged toilets and contaminated water wells. According to the participants, through local communal efforts and the contribution of CSOs and NGOs, the cleaning-up process quickly led to the swift recovery of the facilities. This made the toilets at homes usable within the span of a few months after the flood. The contaminated water wells are also in the process of being cleaned and additionally locals are investing in digging deeper wells to reach fresh ground water.

These findings are summarized below in Table 3.

Condition of WASH Facilities	Pre-2022 Floods	During & Right Afterward 2022 Floods	One Year Later
District Dadu	Meagre, lack of proper infrastructure – pit latrines, communal tube wells, no water supply lines	Severely impacted, difficult to access – submerged under-water, those in drier places difficult to access due to distances and broken roads	Makeshift infrastructure and access difficulties persist – pit latrines, storage of water in drums and utensils. This enhanced gender-based issues of women’s insecurity due to inaccessible clean drinking water and open defecation outside the camp settings due to non-function drinking water and running water for latrines
District Nowshera	Proper infrastructure, easy access – water wells at home, functional toilets and water supply	Severely impacted – clogged drains and contaminated water-wells	Swift recovery paved the way for gradual ease of access –functional toilets and restoration of water wells underway
District Malir – Temporary Encampments	Non-existent	Limited emergency infrastructure – Temporary toilets and water supply lines	Disintegrated services, difficult access – non-functional toilets paving way for pit latrines, fetching water from long distances due to discontinued water supply, enhancing vulnerabilities especially for girls and women and persons living with disabilities

Table 3: Condition of WASH Facilities at a Glance

In general, the flood-impacted communities in all three districts recount having immense difficulty accessing WASH facilities during and after the floods. For Dadu District, access and utilisation difficulties lasted for several months as it took time for water to recede, resulting in having to walk through damaged routes and long distances to fetch water and use public toilets. In the case of elderly, disabled, and women with children this resulted in open defecation as well. In contrast, in Nowshera District, the participants could return to their homes within 15 to 20 days, and rehabilitation efforts ensued, including restoration of toilets, washing, and cooking facilities. Displaced communities residing in Malir District, and similar encampments, faced the most prolonged challenges concerning WASH facilities. Temporary camps only provided good emergency infrastructure for a few months; the temporary facilities have since disintegrated as affected populations have not yet returned to their villages. The current condition of the camps consist of non-functional toilets, make shift pit latrines, and water stored in open buckets and utensils that has been fetched from long distances. Men, women, and children continue to face adverse health outcomes due to waterborne and mosquito borne diseases spread in the camps.

- ▶ Participants across all three study sites shared challenges in accessing clean drinking water, even after more than a year post-flood. A temporary portable water supply was established after the floods with the influx of humanitarian aid from local and international agencies. However, persistent challenges have emerged in acquiring clean drinking, cooking, and cleaning water

Groundwater contamination in the Dadu and Nowshera districts has made it difficult for locals to keep using the previously established handpumps (manually operated pumps to extract groundwater for daily consumption). Both male and female participants shared that they either have to travel long distances to access clean water, which is not always possible or safe, or resort to using contaminated and salty groundwater.

Delving deeper into intersections of gender, men have had an easier time accessing the WASH facilities as compared to women across all three study areas. Women, due to cultural constraints, had limited mobility to



A photo of a girl drinking water in encampment area

begin with and with the flooding were at a further disadvantaged position. In case of Nowshera District, women observe Purdah limiting their access to public facilities.

Whereas, in Sindh, both in Malir and Dadu, conservative gender norms restricted women in how and when they can access water for personal needs. Women with younger children and pregnant women faced issues in accessing WASH infrastructure during and post floods in Malir and Dadu Districts specifically. Those affected in Dadu district had to deal with infrastructure being submerged underwater, unclean water, and difficulty in accessing healthcare. Those pregnant women that had to travel all the way to Malir encampments from their villages had to endure difficult travel, unclean water and sanitation conditions on the way and overall difficulty in accessing health care. Elderly men and women across all three study sites faced access challenges, as they were completely dependent on others for their WASH needs. Their dependence on their children and other community members added to the caregiving burdens for the affected community. Vulnerable groups, such as those with disabilities, and socially marginalised were cut off from the WASH facilities during the floods. Similar to elderly people, caregiving responsibilities of those physically disabled fell on their families and communities who were suffering alongside. Vulnerable, marginalised, and other disenfranchised groups suffered through worse health outcomes, malnutrition, and faced issues with maintaining personal hygiene.

Participants' barriers to accessing WASH facilities in the aftermath of the 2022 floods can be traced to the following:

- ▶ Permanently damaged infrastructure requiring rebuilding and reconstruction;
- ▶ Slow rehabilitation efforts;
- ▶ Socio-economic conditions leading to preference being given to establishing basic food security; and lack of knowledge and awareness around navigating access challenges.

Participants highlighted that access barriers to WASH facilities have created further difficulties. The following themes further emerged in conversation with participants across all three districts around affected WASH services hampering other domains of personal and communal lives.

WASH Access Barriers and Health Impacts

This theme highlights the impact on the health of the flood-affected communities due to the barriers they faced in accessing WASH services. These barriers stemmed from broken to nonexistent toilets, stagnant water, contaminated water wells, damaged roads, and inaccessible transportation services.

Poor sanitation conditions further led to adverse health outcomes for those affected. Participants recounted their experiences with skin infections and waterborne and mosquito-borne diseases after the 2022 floods - the dengue outbreak in Nowshera District claimed many lives. The floods caused further difficulties for communities residing in rural areas as health services were already difficult to access due to the mountainous terrain and geographical distances, and now were nearly impossible to reach.

“We didn’t lose as many people to the floods in 2022 as we lost due to the dengue outbreak. Medicines and doctors were hard to come by, and our people suffered”

[Man, Social Worker, 26-year-old, Nowshera District].

Participants from communities living in the rural areas within Dadu District shared accounts of outbreaks of severe gastro-intestinal diseases. Since water took around six months to recede in Dadu District, participants highlighted that the illnesses were prolonged and left long-term impacts. Study participants from Malir District shed light on the access barriers to WASH services during their displacement and before settling in the camps. These include traveling through submerged roads without having any functional toilets to use. Moreover, the displacement period also made it difficult for them to take care of their hygiene as they were dependent on very few resources that they were carrying on their backs. Their initial stay in the camps eased some of these hardships, as the camps had running water supply, meals provided three times a day, medical camp, and working toilets. However, with time, the difficulties in maintaining positive health returned due to disintegrating WASH services and limited health and wellness facilities at the temporary encampments.

Female study participants shared that the difficulties in accessing WASH facilities have led to challenges in maintaining menstrual health and hygiene. Not having access to clean water and toilets led to urinary infections among women in Malir and Dadu districts. Traditionally women from the affected communities use cloth napkins that require cleaning. Due to lack of washing facilities this directly impacted menstrual hygiene as women resorted to washing in unclean water. There were also accounts shared by participants of affected women utilising dirty rags in place of clean cloth napkins. In more serious recounts, women shared stories of community members being forced to give birth under extremely distressing circumstances due to unsanitary

conditions caused by the floods. Participants, specifically from Dadu and Malir districts, shared stories about miscarriages, maternal and newborn deaths, and other severe health complications arising in the context of post-2022 floods.

“Us women have suffered the most, and we still cannot talk about our challenges and needs”

[Displaced Woman from Sindh, 32 years old, Malir District].

Inaccessibility to WASH facilities, along with other challenges caused by the floods, disproportionately impacted women, children, older adults, and other marginalized folks. Physical access barriers such as broken infrastructure along with socio cultural mobility restrictions exacerbated the challenges faced by these groups. This led to emergence of latrine pits that didn't even have privacy mud walls around them along with a rise in open defecation. Moreover, it also led to usage of unclean water of drinking and cooking resulting in adverse health. Participants linked malnutrition and food insecurity to continued challenges around WASH facilities; the lack of clean water for drinking and cooking continues to impact the affected communities' nutritional needs.

Men and women across the three study sites also highlighted that the inability to execute simple tasks dependent on WASH facilities continues to cause mental distress. Participants have highlighted an immense need to provide mental health services to affected communities after the floods. One woman from the Dadu district shared:

“Not having access to toilets has not only caused physical health issues but has also been the source of constant fear and stress among us women”

[Housewife, 26-year-old].

Overall, discussions with the participants shed light on the links that they have established between WASH access barriers and health outcomes. Participants emphasised the long-term health impacts of continued access barriers to WASH services, summarized in Figure 1 below.

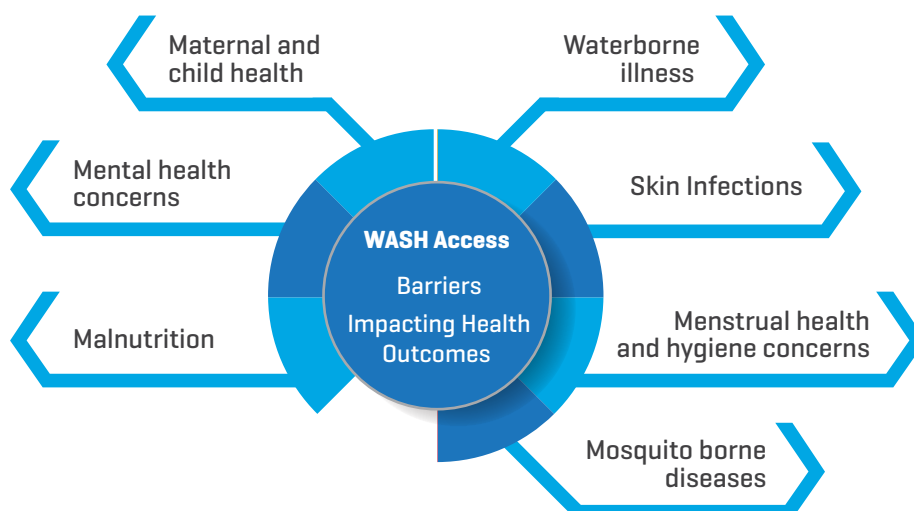


figure 1: Health domains impacted by limited access to WASH services

Challenges Around Utilisation of WASH Services

This section highlights the challenges participants faced in making use of the WASH services. The previous theme highlighted the difficulties in accessing WASH services due to infrastructural challenges and unavailability, whereas this theme explores difficulties in utilisation where services were available, albeit in a limited nature.



A photo of Malir Tent City

Appropriate utilisation of WASH services further exacerbated difficulties for flood-affected communities. In impoverished areas, specifically rural Dadu District and Malir encampments, utilisation remains a massive challenge for women, children, and older adults. Initially, in these areas, the challenges around utilising WASH services for women primarily emerged from concerns about personal safety. In the immediate aftermath of the flood, women shared that they faced harassment and abuse. These threats to their safety deterred them from utilising the communally available WASH facilities. A woman from Dadu District shared,

“During the days of the flood and in the months after, women got sexually harassed and abused when they tried to use communal toilets. It was a horrible time for us”

[Health worker, 35-year-old].

With time, women from the Dadu District reported a decline in personal safety concerns thereby enabling uptake despite some challenges with access. However, women from the Malir District encampment still struggle through these challenges. They shared that since the authorities have issued an evacuation notice, the temporary WASH infrastructure has become non-functional, pushing them to travel long distances to gather water. Furthermore, non-functional and unsafe toilets have added to their continued struggles.

Malir Tent City temporary water supply have turned into latrine pits with no proper drainage system making the toilets less functional compared to the initial days of the camps. Simple sewerage mechanism put in place has been clogged over and over again leading to overflowing containments. Without constant maintenance toilet structures have broken down and rendered useless. The overall hygiene condition in the tents have now worsened due to lack of water supply and other utilities necessary for everyday life. Doors to the toilets over time have been broken and participants shared that for privacy they resort to hanging sheets making them fear for their personal safety. Lack of safety of toilets was also linked to the presence of wild animals and reptiles present in the nearby vicinity of the camps. Snake and scorpion bites along with those of rabid dogs were reported by the participants.

Elderly study participants shared that their health and hygiene have worsened since the floods due to the breakdown of the WASH services nearby. Due to restricted mobility because of age they are finding it difficult to maintain their hygiene by themselves. In interviews they further shared, that they have suffered from waterborne diseases such as cholera and typhoid after floods because clean water was not available to them. An older woman from the Nowshera district shared,

“I cannot walk; the water from the well in my home is not safe for consumption, but because I depend on my family, I try not to bother them much and use the same water for my personal needs”

[House Elder, 80-year-old].

Socio-cultural contexts also impact the proper utilisation of even the limited WASH services available. The conservative nature of the communities’ social fabric does not allow women to discuss their needs openly, and deters them from seeking public amenities. Female participants from all three districts shared that after the floods, due to disruption in their routine lives, they faced added challenges in using communal facilities to address their needs concerning menstrual health and hygiene. Male participants also shared that due to cultural constraints, they feel helpless in creating avenues for women to exercise their bodily sanitation and hygiene practices safely.

Another central theme emerging from the discussions across all three districts was the challenge of independently utilising WASH facilities by children. Participants shared that even after a year and a half, education is disrupted as proper infrastructure needs to be in place for children to use safely. Especially in the Dadu District and Malir District encampments, avenues for children to restart their lives, with some semblance of familiarity with pre-flood activities, are nonexistent. Girls are facing even more difficulties and concerns over their safety, especially as they reach puberty.

Discussions highlight that lack of utilisation of WASH services due to these challenges further exacerbates issues of equitable access to the services. Women, children, elderly, and people with disabilities are further in a disadvantaged position due to temporary and emergency setups not being sensitive to the socio-cultural needs of the affected communities, or the diverse requirements of different peoples (young, old, differently abled). People with physical disabilities

shared through their interviews that relief efforts focus on community members who can be easily accessed, whereas others who end up being invisible due to limited mobility suffer disproportionately. To summarise, the difficulties are multi-layered:

- ▶ Infrastructural Challenges: broken toilets, dysfunctional water supply, contaminated water resources, delayed rehabilitation response
- ▶ Access Challenges: geographical distances, broken roads, water-logged sanitation lines
- ▶ Social and Cultural Challenges: conservative communal set-up, fear of personal safety due to harassment and abuse
- ▶ Economic Challenges: dependency on external aid for repairs and reconstruction efforts

Local Practices and Coping Mechanisms

Participants not only recounted their hardships, but also shared the practices that helps them cope in these difficult times. These practices ranged from steps they took on an individual level to the efforts made at the community level and, in some instances, arrangements made by public and private institutions.

The importance of collectivism, community cohesion, and support cannot be overstated. Participants shared their experiences where social and communal support increased the likelihood of survival in case of extreme hardships during the flood. Communal efforts to ensure women's safety and security were recounted by the Malir District encampments and Dadu District participants. They highlighted that women created groups and took shifts to cover for each other when someone had to use the toilet. A woman from Dadu District shared,

“During the night, in groups, we used to keep watch of the area when any of us had to use the bathroom”

[Community Worker, 36 years old].

Similarly, women in Malir District encampments took collective action to keep the harassers at bay. Moreover, key informants in their interviews from the Nowshera and Dadu districts shared that those people evacuated to temporary camps near their villages utilised social media to stay connected. One key informant shared,

“The locals instantly created WhatsApp groups to create a network of referrals so that people in need can quickly identify where or whom to seek help from”

[Chief Executive Officer, local NGO, 43 years old].

The cultural context of the Nowshera District differs from the other two study areas; most of the evacuated populations did not end up in encampments, but rather they sought shelter in the houses of relatives or close community members. Moreover, homes close to the encampments also provided support in terms of facilitating women taking baths in their homes, providing sanitary and hygiene supplies, and taking care of other needs of women and girls who were displaced.

Study findings also highlight the use of knowledge and practices specific to the regions passed down from generation to generation. For the purpose of this report, such knowledge and practices are referred to as 'indigenous'. Participants highlighted that other than community support, the use of indigenous knowledge was also common among the flood-affected population across the regions. During the floods, when water came through and drowned everything, both men and women were able to hang charpais (bedding made of cane and other local materials) high on tree branches to protect their children from rushing water and contaminated water. Another initiative from indigenous practices was the storage of grains in earthenware jars and pots by the local farmers; this came in handy when food rations ran low. The storage of grains is traditionally done to preserve the local varieties of seeds. Participants shared that understanding and leveraging this indigenous wisdom in times of uncertainty, such as natural disasters, can significantly help reduce concerns around food security.

Female participants shared that in the aftermath of the floods, they had taken the initiative of consulting older women in the community regarding sewing their own sanitary napkins and reviving the age-old practice of using local materials. This solved the issue of having to wash the sanitary cloth over and over again and also reduced the reliance on disposable products, not local to the region. In the spirit of reviving practices, participants expressed that indigenous communal ways offered them relief and reprieve in recovering from the damages inflicted by the floods, as well as a spirit of collectivity. A man from the Nowshera District shared,

“It was only possible for us to return to life and start rebuilding because we were doing it together. The whole neighbourhood did the clean up after the water receded to make the toilets, sewerage system, and homes functional”

[Teacher, 38-year-old].

Across all three study areas, participants shared that collaborative efforts by their communities have made survival possible. Drawing themes from the discussion with participants from all three districts, the two themes therefore resounded around coping mechanisms:

- ▶ **Communal Support:** Both among men and women, communal support through digital and in-person groups were significant for enhancing accessibility and utilisation of WASH services, via information and resource sharing. Moreover, they helped create awareness for and countering challenges and barriers that individuals may have found difficult to navigate on their own.
- ▶ **Revival of Indigenous Practices:** reverting to local and indigenous ways of response post-disasters, which included the use of earthenware pots to save food, purifying water through boiling and using muslin cloth to clean it further, was considered effective and provided relief. Furthermore, among women, sharing knowledge of maintaining menstrual hygiene using hand-sewn undergarments with cotton cloths filled the gap of unavailability of commercial sanitary products, as well as options for re-using rather than disposing.

RECOMMENDATIONS FOR RESILIENCE BUILDING AVENUES

One common theme observed throughout the process of data collection across the three regions was the collective need to create awareness and capacity-building regarding disaster preparedness for the local population, especially in high-risk areas. These could include first responder or aid training; cleaning and storing water for safe consumption; managing common illnesses, like dehydration/diarrhoea; and others.

- ▶ A concern raised by one of the key informants was that women from rural communities may not know how to properly use dignity/hygiene packages sent for by aid organizations, and due to cultural constraints may not be able to avail information about these products. Additionally, distributing disposable hygiene supplies is not a sustainable solution and requires consistent efforts by relief aid workers, and does not offer solutions around sanitary waste disposal of used products. Bringing back the practice of using sewn sanitary napkins made of cotton can therefore be a sustainable solution as it can be used



Meeting with study respondents in Malir Tent City

multiple times. Reinforcing hygiene and cleanliness around its usage would then be imperative, which would include water sanitation practices as well.

- ▶ Another key recommendation from Dadu District was utilizing social media platforms and trusted community networks. WhatsApp groups, or other social media applications, can be used to connect people in times of emergencies. Most people in these areas did acknowledge having access to

smartphones (even if at a household level), and therefore recommend creating a virtual social network. Through this, training, information sharing, and needs assessments can be conducted. Moreover, these groups can also promote community linkages so as to foster cross-community practices and knowledge transfer.

- ▶ The immediate response can make the difference between life and death in emergency situations, and is extremely crucial as it may take a while until help arrives. People in Nowshera District mentioned how they were warned early on, which ensured saving of lives, animals, and also collection of belongings and food supplies before floods hit. Meanwhile, people in Dadu District were evacuated within a few hours after the floods arrived, which led to a much greater loss. Therefore, national disaster-management protocols and strategies, such as issuance of early warnings by local authorities, support towards evacuation, relocation to safe spaces, resource gathering and distribution, maintenance of temporary

infrastructure, etc., which would all be effective in reducing damage.

- ▶ At a policy level, representatives from different organisations therefore recommended developing disasterproof infrastructures and disaster management strategies as a preventative measure. As highlighted by participants in Nowshera District, these strategies helped mitigate the severity of floods.
- ▶ Whereas in areas of Sindh, most people wanted and needed assistance to restore their infrastructure and help to build their lives back up due to the severe devastation.
- ▶ Participants also identified the harmful and non-sustainable agricultural and farming practices that do not respect the capacity of the land, and may be exploitative or damaging - to both the land and its people.
- ▶ Participants from Nowshera District alluded to excessive mining and plantation of invasive (non-indigenous) plant species, which have caused disturbances in the ecosystem. They highlight the need to develop measures to control the extremity of these innovations and address the associated challenges, recognizing that this will aid in averting natural disasters to some extent in the long-term.
- ▶ Similarly, in Dadu District, participants identified that over-building, particularly through housing schemes and farms that impeach natural riverways, has contributed to the magnitude of destruction, and highlight the importance of acknowledging and considering these factors in any future resilience-building efforts.

Summarizing the key recommendations from this study, the following may be sustainable and effective resilience building tools for flood-affected communities:

Capacity Building

- ▶ Youth programs through social media, including first responders.
- ▶ Specific modules for women to care for and protect themselves in emergency settings.

Infrastructure and Systems

- ▶ Early warning systems, protocols, and services to reduce the damage to life and property.
- ▶ WASH infrastructure that can facilitate women, which considers the cultural and safety concerns of local contexts.
- ▶ Long-term plans to secure flood protection walls and dams strategically to minimise damage to crops and property.
- ▶ Policies and guidelines around the development of innovations on local lands, such as assessing the long-term impacts of non-indigenous plant species, technology-based large-scale farming practices, construction of infrastructure around natural ecosystems, etc.

Inclusion and Amplification of Lived Experiences for Programming

Collaborate with the local communities and implementers to take into account local contexts, requirements, and socio-cultural and economic realities.

- ▶ Empowerment and agency of the community and active local grassroots leaders who can

take initiatives towards emergency response, disaster preparedness, and management. These agents of change can also enable the continuation of services and initiatives in the longer term for effective recovering. An example of such an effort was shared by a local NGO representative from Malir District; he shared,

“Installation of tube wells and water filtration plants is something that requires the collaboration of large scale organisations but continued maintenance and running can be delegated to the local community by building their capacity to look after these installations. On a small scale, this has been practised in some areas of Sindh and has shown great success”

[33 years old].

Findings and participatory discussions highlight that resilience building avenues do not lie with any one particular group. Collaborative efforts from local communities together with NGOs, CSOs, and governmental organisations are needed to build systems that can cope with disasters like the one faced by the communities in 2022. Lessons from Nowshera District also highlight that long term planning and investment in the infrastructural reforms can minimise the challenges faced by the communities in the aftermath of such calamities.

Findings highlight that resilience-building to ensure effective WASH programming requires interventions at all stages. The table below showcases these recommendations at three different stages for the most impact.

Immediate Avenues for Resilience Building	Medium-term Avenues for Resilience Building	Long-term Avenues for Resilience Building
First aid training programs integrative of WASH needs	Capacity building programs for disaster preparedness	Investment in flood protection walls and infrastructures
Inclusion of communities in response efforts	Protocols for early warning systems	Investment in WASH services – toilets, water supply lines
Collaborative systems and teams comprising locals, -civil society and government representatives	Revival of local practices and knowledge for contextualised response	Policies around human interference exacerbating natural disasters

Table 4: Resilience Building Avenues

DISSEMINATION MEETINGS AND INSIGHTS

These study findings were shared with the communities where the data was collected. Three local dissemination meetings were conducted, one per each study district. The findings were shared through a discussion based format, the local communities, civil society representatives, and local government representatives shared their views. The discussion revolved around implications of these findings and how best they can be taken forward by different stakeholder groups present. Given that these meetings provided a multi-stakeholder interaction, participants deliberated on the role each can play. The highlight of these interaction was in recognition of:

- ▶ The need of collaborative efforts by communities, civil society and government
- ▶ The need for the local governments to prioritise long term planning and funding efforts focused on disaster mitigation.

The table below highlights the participant distribution and profile:

Region	Women	Men	Participant Profile
Dadu	7	22	Social workers, directors, CEOs of organizations like Nari Foundation, Child Development Organization, and Sujaag Sansar, as well as journalists, grassroots leaders, and legal professionals.
Malir	10	17	Community members, government officials from health department, NGO workers, and media persons.
Nowshera	10	14	NGO workers, community members, medical professionals, representatives from ACTED Pakistan, District Youth Office, and government officials from health department.
Total Participants			80

Table 5: Dissemination Meeting - Participant Profile

Participants discussed the study findings with the research team, and the following further insights were collected from across the three dissemination meetings:



Disaster Risk Reduction (DRR) initiatives are particularly poor in Sindh as compared to KP. Moreover, given the repeated nature of floods, they are not approached with a sense of urgency.

- ▶ Lack of follow-ups by government, NGOs, or the community itself hampers the impact of initiatives, with resistance to change prevailing. Follow-ups would help cement resilience and build capacity to take ownership of response efforts in the long term. Participants emphasised to establish a robust follow-up mechanism involving government, NGOs, and the community to ensure sustained positive changes.
- ▶ The desire and proactive involvement of the community are crucial for sustainable change, but the participants also showed frustration that this cannot be a one-way solution. They raised concerns regarding needing proactive attitudes in the government sector.

In light of the findings, participants discussed the need for the local and federal governments to prioritise funding and support for response, rehabilitation, and resilience building programs.

Participants recommended investing in the development of WASH facilities, particularly focusing on ensuring access to clean drinking water as an utmost priority.

Moreover, looking at the findings from Sindh and KP, participants discussed the need for tailored disaster response strategies to suit diverse geographies and cultures, with an emphasis on local contributions and resources.

Participants across the three meetings shared that long term and medium term initiatives require the government to play a significant role. Communal efforts and immediate solutions can rely on locals, CSOs, and NGOs but would lose their impact if proper structural reforms are not introduced.

CONCLUSION

This report summarizes the key insights from participants' experiences of the 2022 floods, and highlights the need to design initiatives that are intersectional in nature. The findings suggest the importance of considering gender, age, and ability in co-creating resiliency systems for WASH programs in flood-affected and other emergency-settings. While emergency responses in Pakistan may have provided initial access to important WASH services, a more nuanced understanding of local contexts, cultural and indigenous practices, and a diverse lived experience lens is necessary for designing effective solutions that are more likely to sustain while communities prepare to return to their homes.

This philosophy extends to the planning and preparation of preventative efforts, such as constructing appropriate flood-resistant infrastructure, emergency systems, and cooperating with local communities and implementers. There was evidence of such practices being helpful in reducing the impact of flooding in Nowshera District, whereas in cases like the Malir District encampments, building temporary infrastructure which did not account for different users or consider longer-term maintenance has been reported as severely distressing and difficult for flood-displaced populations residing there. All lives deserve dignity and grace, and there is merit and value in collaborative efforts across public, private, and community-based organizations to ensure the longevity of emergency responses and recovery efforts in the aftermath of disasters like the 2022 floods in Pakistan.



Islamic Relief constructed Pit latrines in Khoundi village

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