# Climate-Induced Migration & Impact on Food, Land & Water System (FLWS) Dist. Rahim Yar Khan 2024


**Rural Education and Economic Development Society (REEDS)**

Canal Park Street No.1, House No.1, Near Govt. Girls College Rahim Yar Khan

E.mail- reedryk@gmail.com | +92 685876693

**CLIMATE INDUCED MIGRATION AND ITS IMPACT ON FOOD, LAND AND WATER SYSTEM- 2024**

# Contents

# ACRONYMS

| List of Acronyms | |
|---|---|
| BISP | Benazir Income Support Programme |
| COVID-19 | Coronavirus Disease 2019 |
| DC | Deputy Commissioner |
| DDMA | District Disaster Management Authority |
| FCASs | Fragile and Conflict-Affected Settings |
| FCM | Fragility, Conflict, and Migration |
| FGD | Focus Group Discussion |
| FLWSs | Food, Land, and Water Systems |
| HWISE | Household Water Insecurity Experiences |
| INGO | International Non-Governmental Organization |
| IWMI | International Water Management Institute |
| KII | Key Informant Interviews |
| LSO | Local Support Organizations |
| MHM | Menstrual Hygiene Management |
| MVD | Mobile Veterinary Department |
| NGO | Non-Governmental Organization |
| NCHD | National Commission for Human Development |
| NOCs | No Objection Certificates |
| NRSP | National Rural Development Program |
| NRSP | National Rural Support Program |
| PDMA | Provincial Disaster Management Authority |
| PEEF | Punjab Educational Endowment Fund |
| PKR | Pakistani Rupees |
| PSPA | Punjab Social Protection Authority |
| REEDS | Rural Education and Economic Development Society |
| RYK | Rahim Yar Khan |
| SMS | Short Message Service |
| SDGs | Sustainable Development Goals |
| TV | Television |
| VDOs | Village Development Organizations |
| VIP | Ventilated Improved Pit Latrines |
| WWB | Punjab Workers Welfare Board |

# EXECUTIVE SUMMARY

Climate change's impact on Pakistan has become increasingly apparent. Extended periods of drought and frequent floods have contributed to reduced agricultural productivity, higher livestock mortality rates, and widespread unemployment. These floods are forcing people to abandon their homes, while drought and water shortages are exacerbating their vulnerabilities and driving them to migrate. While at a societal level, climate-induced displacement and migration exacerbate socio-economic disparities, disproportionately affecting the economically vulnerable rural population.

In light of the current situation within the FCM initiative, IWMI, in collaboration with REEDS, conducted a 74-day research study in South Punjab's Rahim Yar Khan district. The study involved the collection of data using 801 household survey questionnaires, 12 Focus Group Discussions (FGDs), and 10 Key Informant Interviews (KIIs). The aim was to create a detailed case study that examines the vulnerabilities of host communities and the challenges associated with climate-induced migration.

The study indicates that among 801 respondents, the duration of residence varied significantly. A considerable portion of respondents, 36.7%, reported living in district Rahim Yar Khan, South Punjab, for 3 to 6 years, while 23.6% had lived there for more than 10 years. Another group, 20.1%, reported a residency of 7 to 10 years, and a smaller fraction, 15.36%, had been there for 1 to 2 years. Only 3.75% had lived there for 6 months to 1 year, and an even smaller percentage, 0.37%, had resided in the area for less than 6 months. This varied length of residence among migrants and host communities suggests a range of experiences and challenges in integrating into the region, which influences the social and economic dynamics of the district and the communities face multiple stresses on food, land, and water systems (FLWSs) due to climate-induced migration.

Food security is compromised as floods and droughts cause a drop in agricultural productivity, leading to food shortages and malnutrition, affecting women and children most as 93.63% respondents reported they were unable to afford healthy and nutritious food while 81.9% had to skip meals due to insufficient resources. Locust attacks further aggravate food insecurity by devastating crops. Frequent floods and extended droughts also degrade arable land, diminishing soil fertility and promoting erosion, which hinders the ability to grow food and maintain livelihoods. Droughts limit water supply for agriculture and drinking, while floods contaminate water sources as 54.56% respondents acknowledged facing issues and experiencing challenges related to accessing adequate safe drinking water, 35.71% of respondents, have no facilities of toilets at all or resort to using bushes or fields, resulting in health crises. These factors significantly impact women, who typically manage household water needs, and children's health and education.

The stresses in Rahim Yar Khan (RYK) district in South Punjab are deeply intertwined with the political, social, and economic environment, leading to complex challenges that heighten regional vulnerability. Political instability and governance issues cause unequal distribution of resources and social services. Cultural norms and traditional hierarchies further exacerbate the impact of food insecurity and land degradation, disproportionately affecting marginalized groups like landless laborers, women, and minorities. Water scarcity and contamination increase the burden on women and children, who are primarily responsible for collecting water for their households. The local economy's reliance on agriculture makes it vulnerable to climate change, with water scarcity and contamination raising production costs and reducing crop yields, leading to financial losses for farmers. This economic pressure, coupled with

political instability, drives migration, straining resources in host communities and leading to wider socioeconomic disparities.

In Rahim Yar Khan, South Punjab, key drivers of risks include climate change with frequent occurrence of disasters, including floods, droughts, and heatwaves. These factors contributed to increased land erosion, reduced soil fertility, and disrupted natural water systems. The findings reveal that 58.8% of respondents have never received early warnings about changes in temperature or extreme weather events, while 41.07% have received such warnings. Among those who received warnings, the most common sources were family members or neighbors (18.98%) and community centers (17.73%). Participants recounted receiving early warnings through various channels, including public announcements in villages, mosque loudspeakers, and mobile phone messages. For those who did receive the early warnings, it provided valuable time to gather belongings, including livestock, and move to higher ground or safer locations. This proactive approach helped safeguard lives and assets, minimizing the loss of property and reducing the risk of casualties. Regarding access to communication technologies, 35.33% of respondents owned their own mobile phones, while 20.97% had access to shared phones. Additionally, 35.21% owned basic phones, and 5.24% owned smartphones. Social media and technology can play a significant role in disaster response, revolutionizing how communities and authorities communicate during crises. Platforms like Facebook, SMS alerts and WhatsApp have been instrumental in disseminating critical information during disasters, allowing residents to share updates about floods, road blockages, and emergency assistance points.

The proposed actions aim to reduce the impact on vulnerable communities, encourage inclusive development, and improve readiness for future climate uncertainties. These measures assign clear roles to policymakers, stakeholders, and organizations, ensuring a collective approach to building a more resilient and adaptive society.

1. Enhance community awareness of disaster prevention and preparedness through comprehensive training, information sharing, and resource allocation at all levels.
2. Simultaneously, government efforts should prioritize improved access to health, education, and essential services, including safe drinking water.
3. Promote climate-resilient farming and integrated water resource management to secure adequate water supplies for human and livestock consumption.
4. Provincial and local government officials should be equipped with the skills and knowledge needed to monitor and assess the vulnerabilities of local populations effectively.
5. Government should create a comprehensive national and subnational internal migration policy, informed by social, economic, environmental, cultural, and demographic data. This policy must address the complex issues surrounding climate-induced migration, offering solutions.
6. Enhanced coordination among local, provincial, and national disaster management authorities to improve EWS effectiveness.
7. Community-based coping mechanisms should be promoted including storing food and water in anticipation of disasters.
8. Capacity building of the farmers in context of Climate Smart Agriculture Innovative Techniques and Technology

9. Advance methods of early warning systems (EWS) in the district should be installed like real-time weather monitoring and sophisticated flood forecasting systems, that could provide accurate and early alerts to at-risk communities.

## BACKGROUND & INTRODUCTION

The district of Rahim Yar Khan in Pakistan faces a multitude of challenges, particularly in the context of climate-induced migration and agrarian stress. Climate change has the potential to significantly impact agriculture, leading to internal and international migration as a response to environmental risks.[1] The region's vulnerability to climate change is further compounded by water scarcity and the need for accurate assessment of water resources for improved water governance.[2] Additionally, the impact of climate change on water productivity in the semi-arid environment of Punjab, where Rahim Yar Khan is located, has implications for the region's agriculture-based economy.[3] The delicate ecological balance, coupled with socio-economic vulnerabilities, has given rise to a series of challenges that impact the livelihoods and well-being of the local population.

The literature on climate-induced migration in Pakistan, particularly in Rahim Yar Khan, highlights the complex interplay between climate change, migration, and governance. A systematic review emphasizes the presence of climate-induced migrants in Pakistan, advocating for tailored strategies to mitigate and adapt to the impacts of climate change[4]. This review underscores the need for investment in climate solutions to protect the lives and dignity of people disproportionately impacted by climate change, especially in regions like Rahim Yar Khan[5]. Additionally, a study on farmers' adaptation strategies in Pakistan sheds light on the stress climate-induced relocations place on social, economic, and ecological infrastructures in urban areas, underscoring the multifaceted challenges posed by climate-induced migration[6]. Furthermore, a comprehensive overview of climate change science and policy in Pakistan highlights the country's vulnerability to the effects of climate change, emphasizing the need to mainstream climate change into national strategy and policy to address the wide-ranging impacts on agriculture, water availability, and extreme climatic events[7,8]. These studies collectively underscore the urgency of addressing climate-induced migration in Rahim Yar Khan and Pakistan, emphasizing the need for tailored governance, adaptation strategies, and international cooperation to mitigate the impacts of climate change on vulnerable populations.

The International Water Management Institute (IWMI) is part of the CGIAR Initiative on Fragility, Conflict, and Migration (FCM). This initiative addresses challenges to livelihood, food, and climate security in fragile and conflict affected settings (FCASs), where migration-related challenges are prevalent. IWMI are committed to helping these communities sustain resilient food, land, and water systems in the face of the

[1] https://knowledgecommons.popcouncil.org/cgi/viewcontent.cgi?article=1754&context=departments_sbsr-pgy
[2] https://www.iwmi.cgiar.org/local-media-releases/iwmi-pakistan-organises-consultation-workshop-on-water-accounting-for-accurate-assessment-of-water-resources-in-punjab/
[3] https://www.mdpi.com/2071-1050/12/9/3905
[4] https://www.researchgate.net/publication/371950701_CLIMATE-INDUCED_MIGRATION_AND_ASSOCIATED_RISKS_IN_PAKISTAN_A_SYSTEMATIC_REVIEW
[5] https://reliefweb.int/report/pakistan/climate-induced-migration-pakistan-global-discourse-local-realities-and-governance
[6] https://www.mdpi.com/2073-4433/13/8/1280
[7] https://knowledgecommons.popcouncil.org/cgi/viewcontent.cgi?article=1754&context=departments_sbsr-pgy
[8] https://www.adb.org/sites/default/files/publication/357876/climate-change-profile-pakistan.pdf

climate crisis by working closely with governments and partners to generate evidence on effective policies and programming. Under the FCM initiative, IWMI planned to conduct research in South Punjab in Rahim Yar Khan district from Dec 2023 to Feb 2024 with the aim of developing a comprehensive case study on the vulnerabilities of host communities and climate-induced migration challenges. This research will contribute to the improvement of disaster response mechanisms, particularly in the realm of anticipatory action. This research entails stakeholder meetings with relevant government authorities and local partners on the ground, as well as interviews and surveys with climate induced migrant communities.

## OBJECTIVE AND PURPOSE

The study objective is to help understand the interactions between various hazards, multi-dimensional vulnerabilities and impacts observed during the events and to understand how and to what extent the population was affected by aggravated disaster impacts due to multiple hazards and violence (both host communities and migrant communities). It also aims to analyze the early warning system and disaster management response to assist future investments in risk reduction and anticipatory action specifically in the case study contexts, as well as the role social media may play in resilience building.

The purpose of the research study is to address key research questions, shedding light on the complex dynamics of climate-induced migration in Rahim Yar Khan (RYK). The findings will contribute valuable insights to the following research inquiries:

**1**. **Stresses on FLWSs:** The study aims to identify and analyze the primary stresses on food, land, and water systems (FLWSs) faced by migrants and host communities due to climate induced migration. Special attention is given to understanding the unique challenges experienced by women and children during various disasters, including floods, droughts, locust attacks, and health **emergencies/crises over the past 5 years.**

**2. Intersection with the Socio-Political Landscape:** To explore how identified stresses intersect and interact with the political, social, and economic environment of Rahim Yar Khan district, offering a comprehensive understanding of the broader contextual factors influencing climate-induced migration in South Punjab.

**3. Drivers of Risk and Early Warning Systems:** To investigate the underlying drivers of risk that led to disasters in the district. It will evaluate the effectiveness of existing early warning systems (EWS) and extract valuable lessons learned from past experiences.

**4. Community Coping Mechanisms and Post-Migration Issues:** To delve into how communities cope with disasters and the factors influencing migration. Post-migration issues faced by communities explored, providing a holistic view of the challenges encountered in the aftermath of migration.

**5. Role of social media and Technology:** Understanding the contemporary landscape, the research assesses the role played by social media and technology in disaster response. This includes examining how these tools have influenced communication, coordination, and resilience strategies in the face of climate-induced disasters, including gender gaps in technology access and use.

By addressing these research objectives, the study endeavors to provide a nuanced understanding of the intricate relationship between climate-induced migration, environmental stresses, and the socio-political landscape in Rahim Yar Khan. It will not only contribute to academic knowledge but will also inform practical strategies for resilience, disaster response, and sustainable development in the region.

## LIMITATIONS:

The study confronts significant limitations that impact the scope and depth of its findings. Foremost among these is the absence of nationally available data specifically tracking climate migrants or displaced persons, including in Rahim Yar Khan (RYK). This lack of comprehensive data posed a significant challenge in accurately identifying and reaching these communities. Initial identification relied heavily on a scoping visit and institutional knowledge, which may have resulted in the inadvertent omission of certain communities. Furthermore, the study's reliance on a singular point-in-time survey presents limitations in capturing the dynamic nature of climate-induced migration experiences. Seasonal or temporal variations in the experiences of migrant or displaced persons may not have been fully captured, potentially leading to an incomplete understanding of their situations.

Moreover, the dynamic nature of climate change itself poses a challenge, as the study only offers a snapshot of the situation at a given moment. Future developments may reveal different patterns or challenges, highlighting the need for ongoing research and monitoring.
Additionally, field teams may have encountered various other specific limitations during data collection, which merit further exploration and documentation. Despite these constraints, the study provides valuable insights into the complex interplay between climate change, migration, and governance in Rahim Yar Khan and underscores the importance of addressing these challenges through tailored strategies and collaborative efforts.

## RESEARCH APPROACH AND METHOD:

To achieve the objective, qualitative and quantitative research methods were used, including household survey, Focus Group Discussions (FGDs), Key Informant Interviews (KIIs) and consultations with stakeholder actors, to comprehensively explore the impacts of climate-induced migration on food, land, and water systems in Rahim Yar Khan. REEDS Research team oversaw overall data collection as well as appointing a team of experts for data collection. This research employs an exploratory mixed-method approach to present findings on climate induced migration in Rahim Yar Khan based on the analysis of data derived from literature review and primary findings.

The Research teams of REEDs Pakistan also worked extensively in the fields to identify and engage with the migrant communities. The secondary analysis looks at different global perspectives regarding climate induced migration and compares them to local realities of Pakistan. The primary analysis takes into consideration the practices, perception of, and planning for climate induced migration in Rahim Yar Khan as derived from a range of stakeholders, including relevant government departments, non-governmental organizations (NGOs) and academics.

1- **Household Survey:** Data and information were obtained through structured 200 question Household Survey from 801 Households (309 females & 492 Males). The data collection strategy for the household survey involved conducting rigorous surveys using Kobo Collect, an app based on the open-source ODK Collect app. This method employed among climate-induced migrant communities, covering all four tehsils and the Cholistan desert. Sample size to 801 respondents utilized to ensure robust statistical representation. The questionnaire survey aims to delve deeply into the impact and effectiveness of climate change, as well as identify future directions for resilient practices among migrant communities. Four teams, each consisting of two enumerators (one female and one male in each pair) carried out the household survey over a period of 20 days.

2- **Key Informant Interviews:** 10 informal discussions as Key Informant Interviews (KIIs) were conducted. The findings were obtained through in-depth interviews with ten qualified designated individuals, six of whom belong to relevant Government departments and semi-Government organizations who were directly or indirectly working in connection to community and climate change in the district. These stakeholders include District Disaster Management Authority (DDMA), the Agriculture Extension Department, the Population Welfare Department, the Farm Water Management System, On-Farm Water Management, Environment Protection Authority, the Livestock Department and the Semi Govt , Non Govt Organization (NGO) National Rural Support Programme (NRSP) NGO Human Development Foundation and National Commission Human Development NCHD.

3- Focus Group Discussions: Focus group discussions were utilized to explore cause-and-effect relationships, policy interventions, and the mobility of people to capturing details on family, occupation, migration causes, preferred locations, duration, facilities, livelihood sources, and hardships. Across 12 focus group sessions, with 7 involving only female participants and 5 with male participants, a total of 45 male and 89 female participants shared their insights in various specific villages where discussions occurred were Barohi Baloch, Tiba Ghareeb Shah, Shair Muhammad, Basti Langi War, Hareer, Jan Muhammad, Model village Lal Shah, 179/7R, 181/7R, 52/P, and 45/P in target area. The qualitative data, gathered in local languages, were translated into Urdu during fieldwork and later transcribed into English for analysis using spreadsheet.

## DISCUSSION AND ANALYSIS:

These 9 sections pertain to 200 survey questions framed from assessing the responses of respondents.

1- Socio-Demographic and Migration
2- Household Use and Drinking Water: Source, Satisfaction, Safety
3- Sanitation
4- Wealth Index or Equity
5- Menstrual Hygiene Management (MHM)
6- Household Water Insecurity Experiences (HWISE)
7- Food Insecurity Experience Scale
8- Health/Water-Borne Diseases
9- Early Warning Awareness & Digital Ecosystem

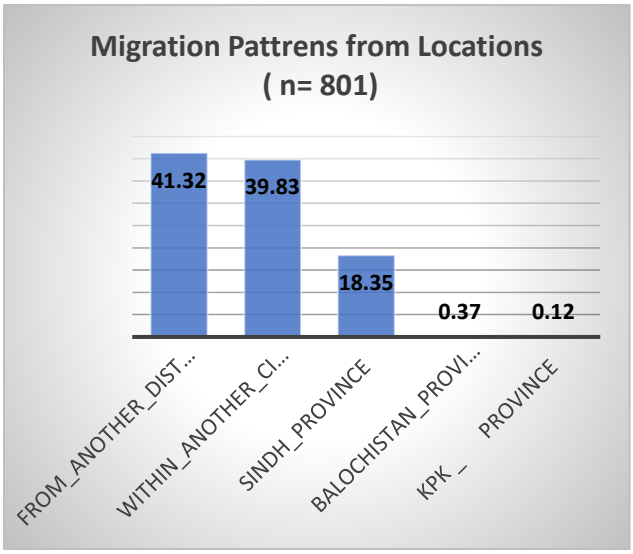
## RESEARCH FINDINGS:

This section represents different aspects relating to changes made in the living terms and show how do disasters intensify the vulnerability of migrated people and how does resilience lessen it. Following that each analysis presents the main theme along with quotes taken from FGDs transcripts for better illustration. Most participant migrants in FGDs and in-depth interviews are involved in agriculture, labor, handicrafts, and livestock.

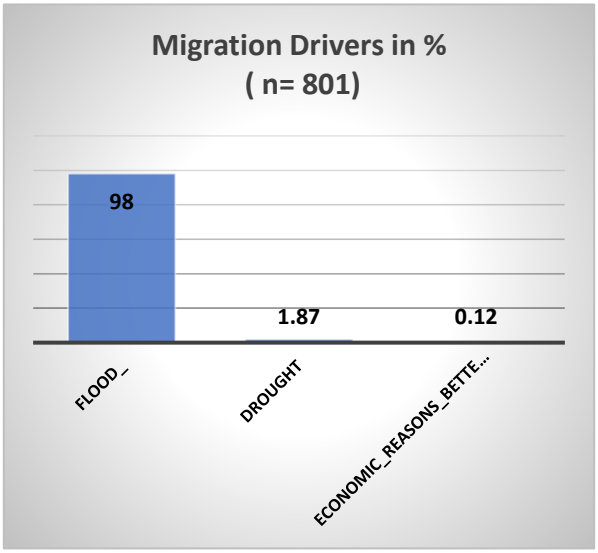
## SECTION 1: SOCIO-DEMOGRAPHIC AND MIGRATION

The socio-demographic and migration details gleaned from the survey reflect a comprehensive picture of the surveyed population, shedding light on their demographics, migration behaviors, and socio-economic standings. Analysis of the Tehsil/Area distribution reveals that the majority of respondents are from Rahim Yar Khan, followed closely by Sadiqabad, Khanpur, Liaquatpur, and the Cholistan desert. Gender-wise, the survey exhibits a slight skew towards males, comprising 61.3% of respondents compared to 38.7% females. With an average age of 41.14 years and a standard deviation of 11.43, the surveyed population spans a diverse age range. The overwhelming majority of respondents are married (96.13%), while a small fraction are widowed (3%) or divorced (0.62%). Most households report having living children (97.25%), with an average of 2.58 boys and 2.36 girls per household. Notably, a significant portion of households have children under 5 years of age (60.05%), averaging 1.77 children per household.

*Graph 1: Migration Patterns*




*Graph 2: Primary Drivers of Migration*

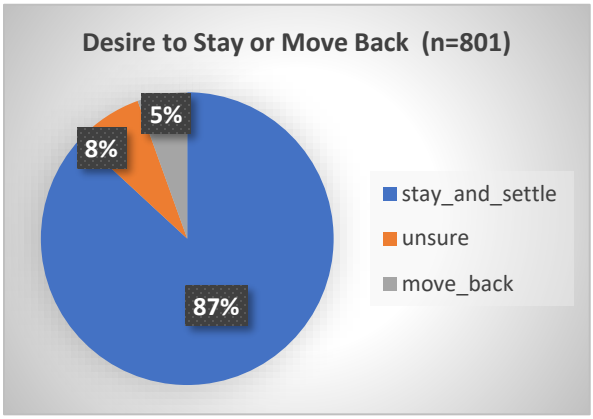



The primary driver of migration or displacement is overwhelmingly attributed to floods (98%), with a minority citing drought or economic factors compelling to seek safer places due to sudden onset floods, resulting in the evacuation of homes without predetermined destinations. Many migrated collectively as communities, settling in vacant areas or places with living opportunities, driven by the need to ensure family safety amidst flood-related challenges.

Out of 801 respondents' data on their current residence duration, showing a diverse range of durations. The majority reported living for 3 to 6 years (36.7%) or more than 10 years (23.6%), while smaller

percentages reported 7 to 10 years (20.1%), 1 to 2 years (15.36%), 6 months to 1 year (3.75%), or less than 6 months (0.37%).

*"I used to work as a farmer in a desert village, earning a decent income from my fields. However, circumstances forced both my family and our entire community to leave our homes and farmlands, which became barren due to the lack of water for our daily needs and for our livestock. We migrated to a new destination. Since then, to support my family's daily needs, both my wife and I have taken up manual labor. Unfortunately, the place where we have resettled is not much better than our native village, as it too is severely affected by drought. In fact, our village now lies abandoned, as everyone has moved to nearby villages." (Male FGD participant from Chak 237-P Cholistan area Sadiqabad)*




*Graph:3 Intention to Settle or move Back to Previous Homes*

Regarding settlement intentions, most respondents expressed a desire to stay and settle in their current location (86.77%), while some were unsure (7.62%) or planned to return to their previous homes (5.49%). Participants desire to remain in their current location, showed attachment and resilience, likely influenced by access to basic facilities, social networks, and livelihood opportunities. Most participants reported their houses were destroyed by floods pre-migration, underscoring the disaster's severity and the urgent need for assistance. Flood impacts led to decreased employment, increased living costs, destroyed crops, disrupted education, health issues, and inadequate sanitation facilities.

“Before the flood, our children were prospering, leading a good life, and receiving an education. However, after the flood, education stopped, and our children have fallen ill. Climate change means lack of rain, resulting in a drought that affected our crops, leading to a decline in income." Female FGD participant from village Shair Muhammad Sadiqabad

"Now, diseases are more prevalent, and medical expenses have shot up. Weather changes make everyone sick, and even the doctors find it challenging to understand the illnesses." Male FGD participant from Chak 181/7R Desert area Liaqat Pur

“Effects of Flood: Diseases occur, and due to contaminated water, our family members got sick; rashes and sores appeared. Due to the flood, the water became poisonous, and due to lack of clean water, the situation worsened. Dry and salty water caused the land to deteriorate, and crops were destroyed. The crops did not grow; the effects of the flood were severe.” FGD participant from village Shair Muhammad Sadiqabad

Most of the respondents, about 91.39%, are living with their families. Average family size is 7.45 in surveyed families. Educationally, a significant proportion of respondents had never attended school (82.65%), with only a small fraction completing up to class 5 (8.74%) or higher education. Self-identification as the head of the household was prevalent (54.81%), followed by joint status with a spouse (24.59%). In terms of breadwinning, respondents mainly identified themselves (53.31%) or their spouses (26.09%) as

the primary earners. Prior to relocation, most respondents reported full destruction of their previous homes (95.63%), accompanied by negative impacts on income or livelihood (97.13%).

Presently, the majority were engaged in daily wage employment (57.3%), followed by housewives (21.1%) and self-employment (7.49%). Average monthly household income stood at PKR 17,039.77, with a predominant reliance on casual wage labor (69.16%).

However, monthly expenditures averaged PKR. 23,903.53, indicating significant financial strains among households. Post-migration, participants experienced a notable increase in income levels, primarily relying on daily wage labor for livelihoods, although fieldwork was limited. Despite higher income post-migration, average household expenses surpassed earnings, exacerbating financial strain. Lack of savings or safety nets heightened vulnerability to food insecurity, limited healthcare access, and challenges in meeting basic needs.

FGD participants shared that "the cost of flour increased from 4000 rupees to 6000 rupees per (Mond=40KG) and the price of oil/ ghee rose from 250 rupees to 400 rupees per kilogram. This indicates a significant inflationary impact on the cost of living".

During Male FGD they also shared that, before flood, the average daily income was around 300 rupees, but now it's 500. One house accommodates more people, and expenses have increased from 200 to 500 rupees. While females did know about exact income and expenses of household.

Participants expressed dissatisfaction post-migration due to resource scarcity, lack of employment, and impacts on children's education.

> Language barriers added layer of complexity. Our children face discrimination and struggle to integrate into the education system of the host country. – FGD participant, in Male FGD- UC Villani Model Village Lal Shah

During female focus group, participants shared that after migration, there is no government school where children can study. Private schools are here, but the fees and other expenses are challenging to manage. Now, they have to work as laborers on others' lands, whereas there they had their own land on which they used to cultivate.

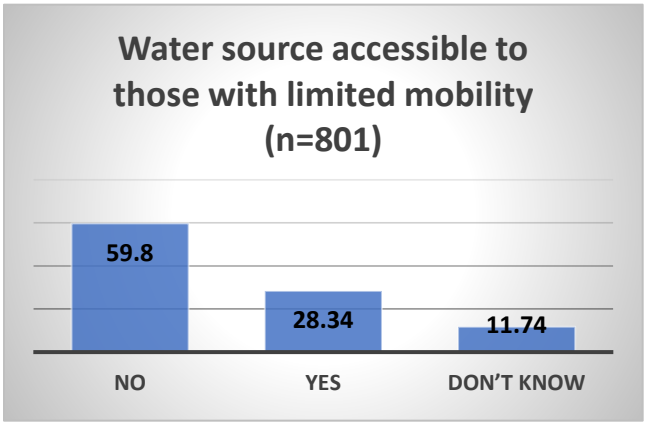
Despite challenges, reluctance to return to previous locations was evident due to ongoing flood risks and absent essential facilities. The flood of 2022 was highlighted as a significant event prompting migration, along with past experiences, such as the 2010 flood, suggesting a pattern of displacement in response to environmental challenges.

*"The flood in 2022 was same as in 2010. Our livestock and homes were swept away, and the roads were blocked with water. It was like facing an enemy. In these conditions, no one heard our voice. It*

*was a very difficult time for our women, children, and disabled family members."* FGD Participant from village 45-P Tehsil Khan pur

## SECTION 2: HOUSEHOLD USE AND DRINKING WATER: SOURCE, SATISFACTION, SAFETY

The survey's Section 2 provides a detailed examination of household water usage and drinking water practices, shedding light on various aspects such as the availability, safety, and satisfaction levels associated with different water sources. One of the key findings pertains to the primary source of drinking water, with a significant proportion of households relying on piped water into the dwelling (50.81%), followed by public tap/standpipe (31.71%).

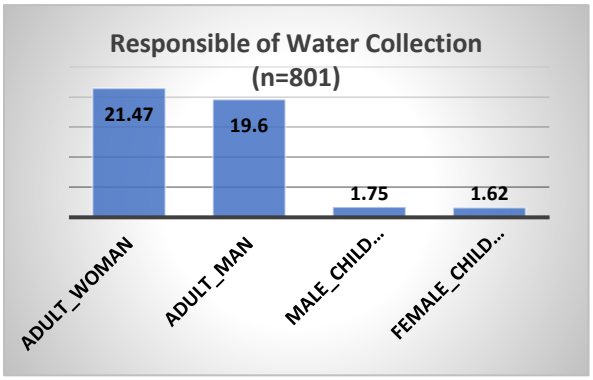



*Graph 4: water source Accessibility to those with limited mobility*

The accessibility of drinking water sources to individuals with limited mobility or disabilities is a crucial consideration for ensuring inclusivity and equal access to essential resources in villages. People mostly do not have knowledge and preference to do it. However, the survey results indicate that accessibility challenges persist for a significant portion of respondents. Among the participants, 59.8% reported that the drinking water source is not accessible to those with limited mobility or disabilities, highlighting a concerning lack of accommodation. These findings underscore the importance of addressing accessibility barriers to ensure equitable access to drinking water for all members of the community, regardless of mobility or disability status.

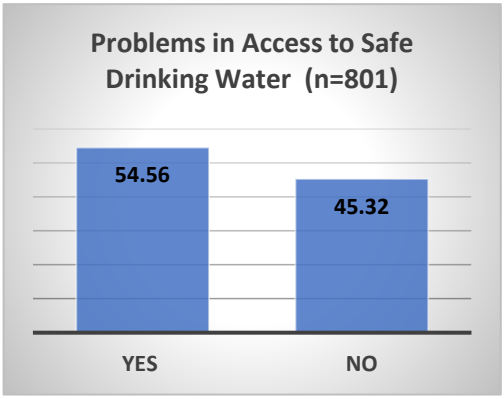
Regarding the reliability of drinking water sources, the majority of respondents reported that water was consistently available year-round (70.41%). However, perceptions of safety varied among respondents, with 27.72% expressing doubts about the safety of their drinking water sources for women, young girls, and boys.

In terms of the responsibilities associated with water collection, adult women and men were most commonly tasked with this duty, comprising 21.47% and 19.6% of respondents, respectively. The predominant mode of transportation for water collection was by foot/walking (34.71%), indicating a reliance on nearby water sources within walking distance. The duration of water collection activities also varied, with a notable percentage of respondents spending between 15 to 30 minutes on this task (15.36%).




*Graph:5 Water Collection Responsibility*

While the majority rated the quality of their household drinking water as good (61.05%), concerns regarding taste, pollution, and odor were raised by a minority of respondents. In terms of household water usage for domestic purposes, handpumps into the dwelling emerged as the primary source (57.43%).




*Graph 6: Access to safe drinking water to migrants*

54.56% respondents acknowledged facing issues and experiencing challenges related to accessing adequate safe drinking water. The most prevalent concerns highlighted were long wait times, delays in accessing water, concerns about children being left unattended at home while fetching water, emphasizing safety implications poor quality of water, including bad taste and smell. Safety concerns regarding the water source were also notable with respondents expressing apprehensions in this regard. People mainly rely on sources of drinking water that are accessible to them and bearing no cost at all.

No payment for drinking water underscores the importance of equitable access to this essential resource, especially to migrants community where financial constraints may hinder access to safe drinking water and compromise their health.

When faced with difficulties accessing water for household use, respondents employed various coping strategies, including reducing laundry, limiting showers, and borrowing water from neighbors. Despite these challenges, these strategies reflect a mix of resourcefulness and adaptability in managing water scarcity.

As per FGD findings, it was revealed that before the flood, the majority of households had their own handpumps, ensuring convenient access to clean drinking water within their compounds. Some households in the communities do not have handpumps at their houses, the responsibility of collecting drinking water predominantly fell on women and girls. These findings shed light on the gendered dynamics of water accessibility, with women and girls often shouldering the burden of traveling outside to fetch water for their families. This reliance on external water sources underscores the importance of assessing gender-specific needs and vulnerabilities in disaster preparedness and response efforts, especially concerning access to basic necessities like clean water.

During the post-flood focus group discussion (FGD), participants expressed dire circumstances regarding access to clean drinking water. It was reported that in the aftermath of the flood, communities faced a severe shortage of water infrastructure. Many shared that their handpumps, which were previously the primary source of clean water, were damaged during the flood, leaving them without any functional facilities for accessing drinking water. Consequently, the absence of alternative clean water sources forced residents to resort to drinking contaminated water at times, posing significant health risks to themselves and their families.

*"Can you imagine waking up one morning, going to the tap for a drink, and finding the water yellow and stinky? It's not just about drinking; it's about cooking, bathing, and even giving water to our animals. We had no choice but to leave our homes because there just wasn't enough clean water left for everyone." Female Participant in FGD from village molvi khan puhammad UC chahchran Khan Pur*

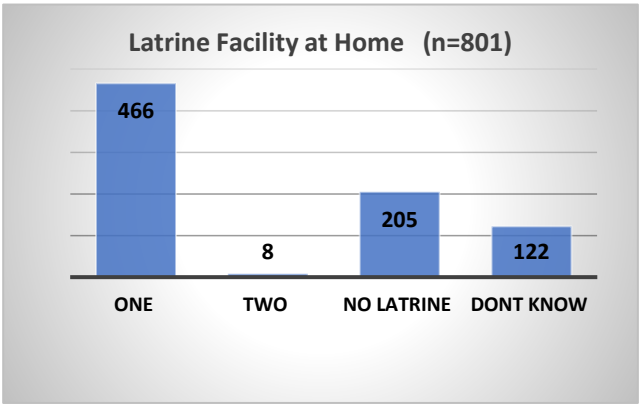
*Figure 1 Picture 1: FGD with Females in Village-----*

During the focus group discussion (FGD), participants highlighted the alarming deterioration in water quality immediately following the flood. It became evident from their accounts that the water, which was previously clear and potable, turned visibly contaminated in the aftermath of the disaster. Residents described how the water changed color to a yellowish hue and emitted a foul odor, indicating severe contamination. This sudden degradation in water quality posed significant challenges for the community, as access to safe and clean drinking water became increasingly scarce.

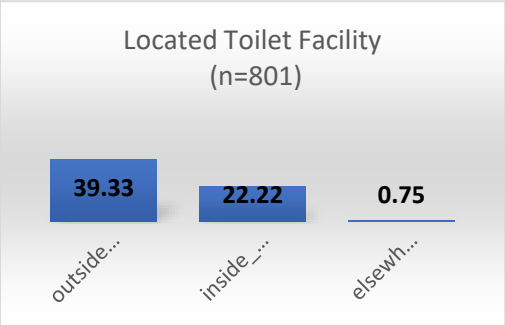
## SECTION 3: SANITATION

The findings from Section 3 of the household survey delve into sanitation practices within the surveyed population, offering insights into toilet facilities, waste disposal methods, and water management strategies.

Majority of households have one washroom with a toilet facility (58.25%), while 25.63% have no such facility highlighting a gap in sanitation infrastructure.




*Graph 7: Latrine Facility at home*



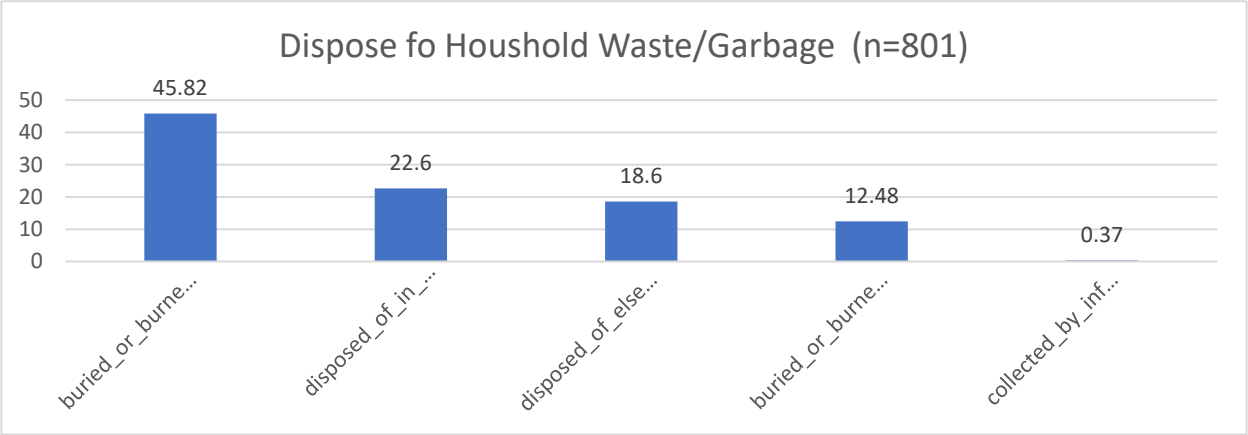

Graph 8: Latrine Facility location

Members of household typically use various types of toilet facilities. The majority, accounting for 35.71% of respondents, have no facilities at all or resort to using bushes or fields. Another significant portion, constituting 30.84% of respondents, utilize pit latrines. Some households, comprising 15.86% of respondents, are connected to a piped sewer system, while others, about 6.12%, rely on septic tanks.

A smaller percentage, approximately 4.37%, have pit latrines with slabs, and a minority, 2%, utilize ventilated improved pit latrines (VIP). Additionally, there are households, making up 1.62% of respondents, where people use toilets elsewhere. Some households, representing 1.5% of respondents, have pit latrines without slabs (open pits). Furthermore, there are lesser-used options such as buckets (0.5%) and hanging toilets/hanging latrines (0.25%). A few respondents also mentioned alternative arrangements like using a neighborhood washroom, a neighbor's house, or other unspecified locations.

Accessibility to toilet facilities was generally favorable, with 61.17% of households reporting that everyone could access and use the toilet at all times. However, challenges were identified for the remaining households, primarily related to the availability, safety, and distance barriers preventing access.

Despite the prevalence of shared toilet facilities, a significant portion of households did not share them with others (71.91%). For those who did share, the average number of households sharing the facility was approximately three, indicating a moderate level of sharing.




Graph: 9 Dispose of Waster material

In terms of waste disposal practices, the majority of households disposed of household waste by burying or burning it outside the household (45.82%). However, significant proportions also utilized designated waste disposal sites (22.6%) or disposed of waste elsewhere (18.6%).

Similarly, household water used for cooking, laundry, and bathing was disposed of through various means, including directly to open ground or (16.73%) or via sink drains connected to pits or open drains (5.12%). Overall, the findings underscore the importance of addressing sanitation challenges and promoting

hygienic practices to ensure the well-being and health of the migrants. Efforts to improve access to adequate toilet facilities, waste management systems, and safe water disposal methods are crucial for enhancing sanitation standards and mitigating associated health risks.

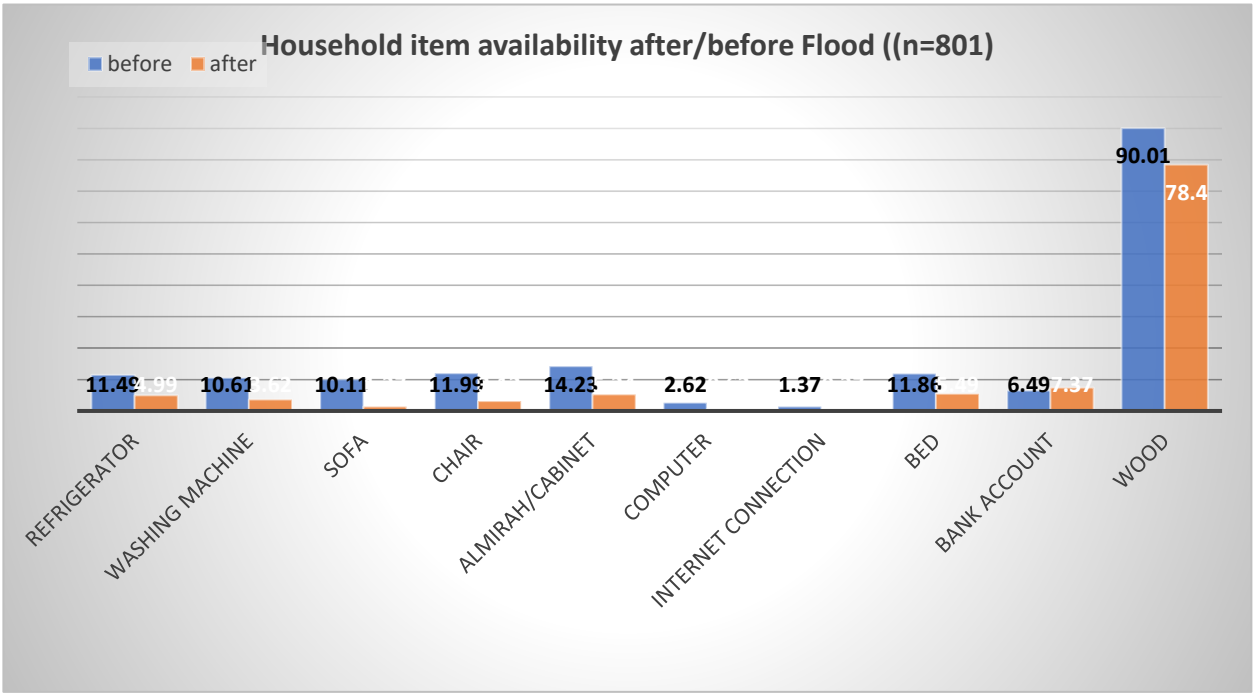
The findings from the focus group discussion (FGD) indicate that a significant majority of people did not have latrines in their households before the flood occurred. This observation emerged consistently across the discussions, reflecting a prevalent lack of proper sanitation facilities among the participants prior to the flood or drought. The absence of latrines highlights a concerning gap in basic infrastructure, which posed challenges to hygiene and sanitation practices in the community. This suggests the importance of addressing sanitation needs and implementing initiatives to improve access to adequate facilities, especially in vulnerable areas prone to natural disasters like floods.

Regarding sanitation, before flood, females and males used to go to the fields for open defecation. They had a culture where 2 or 3 women went together for privacy and covered each other. Even during the flood, they continued this practice. For bathing, they used water from the fields during the flood and did the same at night. If necessary, during the day, they covered themselves and went to the fields. Some of them shared that female during the flood, they had temporary walls for privacy, and they used temporary toilets. Water was scarce, and sanitation was challenging. At that time only flooded water was available for sanitation. Going alone created a fear that someone might be watching, so, they prefer to go together. Due to the flood, there were insects and snakes, and there was fear of how we would manage. We had to find a corner or use curtains to manage the situation.

As for as the male side, compromises personal hygiene and dignity, as individuals are forced to relieve themselves in open spaces without privacy or cleanliness. This not only affects their physical well-being but also their mental health and self-esteem. But they can go for open defecation at any time.

## SECTION 4: WEALTH INDEX OR EQUITY

The household survey focuses on assessing the wealth index or equity within the surveyed population, exploring changes in asset ownership and household characteristics before and after migration or displacement. Before migration or displacement, a significant portion of households did not possess certain assets, such as refrigerators (88.39%), washing machines (89.26%), sofas (89.76%), chairs (87.89%), or almirahs/cabinets (85.64%). Additionally, access to modern technology was limited, with a majority of households lacking computers (97.25%) and internet connections (98.5%). This suggests a relatively low level of wealth or asset ownership within the population prior to migration or displacement.




*Graph 10: Household Assets Comparison*

After migration or displacement, there was a minimal increase in asset ownership, but significant disparities persisted. While some households acquired assets such as refrigerators (4.99%), washing machines (3.62%), and chairs (3.12%), the overall ownership remained relatively low. Similarly, there was a marginal improvement in access to computers (0.62%) and internet connections (0.37%) after migration or displacement, indicating limited progress in enhancing wealth or asset accumulation. The type of fuel used for cooking also reflected socio-economic conditions, with a predominant reliance on wood (90.01%) before migration or displacement. Despite some diversification after migration or displacement, with increased use of animal dung (15.23%) and biogas (1.75%), wood remained the primary fuel source for a majority of households (78.4%). This suggests persistent challenges in accessing clean energy sources and improving living standards.

Changes in housing materials further highlight disparities in wealth or equity within the population. Before migration or displacement, the main materials for roofs and walls were often natural and locally sourced, such as palm bamboo, reinforced brick cement, or dirt. Despite some variations in materials after migration or displacement, including increased use of reinforced brick cement for roofs (32.21%) and bricks for walls (14.73%), many households continued to rely on traditional materials such as dirt (35.58%) or unbaked bricks with mud (7.99%). This indicates limited progress in upgrading housing infrastructure or improving living conditions post-migration or displacement. Moreover, access to financial services such as bank accounts remained relatively low both before and after migration or displacement. While some households reported having bank accounts (6.49% before migration, 7.37% after migration), the majority still did not, suggesting persistent financial exclusion or limited access to formal banking services within the population.

## SECTION 5: MENSTRUAL HYGIENE MANAGEMENT (MHM)

Focusing on the MHM practices and challenges faced by women who experience menstruation, 24.22% females' respondents were willing to respond to the MHM questions. However, 9.24 % did not menstruate and 5% were unwilling to participate, highlighting potential barriers to collecting comprehensive data on MHM practices.

During FGDs, they shared that women face challenges in managing menstrual hygiene, particularly due to the lack of privacy and resources. Migrated women face challenges accessing sanitary products due to limited familiarity and financial constraints. As a result, they often resort to using washable cloth pads. However, the lack of water, privacy, and suitable drying areas poses difficulties for women and girls in managing menstrual hygiene, particularly in flood-affected regions. This situation compels women to use unclean materials, leading to health problems such as infections and skin irritations. Inadequate menstrual hygiene management (MHM) can also worsen health issues, including urinary tract infections and reproductive problems.

Post-floods, women faced exacerbated challenges in managing menstrual hygiene due to the disruption of essential services and infrastructure. Before the floods, limited access to sanitary products was already a concern, but after the disaster, the situation worsened. The floods often washed away their assets and disrupted, making it even more difficult for women to access these essential items. Financial constraints further compounded the problem, as many families struggled to afford sanitary products amidst the post-flood economic challenges.

Moreover, the lack of privacy and suitable facilities for menstrual hygiene management posed significant hurdles for women and girls. Flood-affected areas typically experience water shortages, which made it challenging for women to maintain cleanliness and wash reusable cloth pads effectively. Additionally, the floodwaters often contaminated water sources, exacerbating hygiene concerns and increasing the risk of infections and other health problems.

Households are predominantly occupied by males due to various reasons such as engaging in post-disaster recovery efforts or seeking alternative sources of income, females often struggle to find the time and

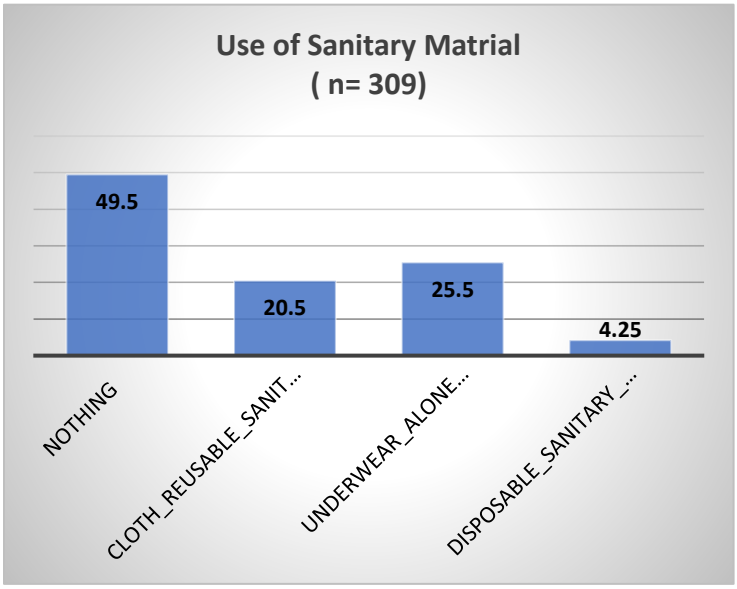
privacy needed to manage their menstrual hygiene effectively. With limited access to private spaces and the responsibility of caring for family members amidst the chaos of post-flood conditions, women and girls may find it challenging to dedicate time to wash and dry their cloth pads. As a result, they may resort to wearing the same cloth pads for extended periods, compromising their hygiene and increasing the risk of infections and discomfort. This prolonged use of cloth pads can lead to adverse health outcomes, including skin irritations, infections, and other hygiene-related issues. Moreover, the lack of clean and private spaces for washing and drying menstrual hygiene products exacerbates the challenges faced by women in maintaining their menstrual health and dignity in the aftermath of a flood.

The challenges of post-flood menstrual hygiene management were further exacerbated by the lack of suitable drying areas for cloth pads. With homes and infrastructure damaged by the floods, women struggled to find clean and private spaces to dry their reusable menstrual hygiene products, leading to potential hygiene-related issues.

Participants shared that women often have to wait until men leave the household before they can change their menstrual clothes.

Additionally, the absence of extra cloth for menstrual hygiene poses a significant hurdle, forcing women to resort to washing and reusing existing clothes. This practice not only compromises hygiene but also underscores the urgent need for access to affordable and sustainable menstrual hygiene products.

*"In the camp, we lack proper places to wash or use the latrine," shared a participant during the survey. "We haven't discussed menstrual health with our girls, and it's challenging for us to manage due to the camp conditions. Many of us face allergies and rashes because we use basic cloths and contaminated water to clean them. Privacy was also a concern since the latrines were in places where men gather." FGD Participant – Village Barohi Balooch UC Chandia Tehsil Khan Pur*




*Graph 11: Use of Sanitary Material*

Regarding the availability of water for washing during menstruation, responses varied. While some reported consistent access to water throughout the day (always: 7.99%, most of the time: 7.74%), others faced challenges, with water being available only sometimes (5.12%), rarely (2.62%), or never (0.75%). Similarly, perceptions of water cleanliness varied, highlighting disparities in sanitation infrastructure and access to clean water sources. Privacy emerged as a significant concern during menstruation, both at home and while traveling or running errands. While some individuals reported feeling comfortable washing and changing themselves in privacy most of the time (7.99% at home, 4.62% outside), others faced challenges, with privacy being limited or nonexistent (e.g., sometimes, rarely, or never).

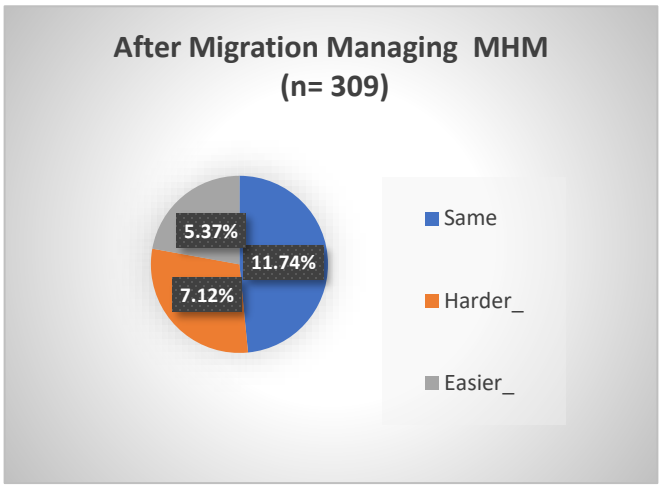
In terms of MHM materials usage, majority of respondents, comprising approximately 82.99%, reported using cloth reusable sanitary pads as their primary hygiene material for managing menstruation. This indicates a preference for eco-friendly and reusable options among the surveyed individuals. A smaller percentage, around 15.98%, mentioned relying solely on underwear without any additional material for menstrual hygiene management, suggesting a lack of access to or awareness about alternative hygiene products. A minimal number of respondents, approximately 1.03%, indicated using disposable sanitary pads or cloth, highlighting a potential need for more accessible and sustainable menstrual hygiene solutions. This observation underscores the prevalent practice among women in the community to not utilize cloth as a primary means to manage menstruation. The use of cloth for menstrual hygiene management is often influenced by factors such as limited access to commercial menstrual hygiene products, cultural norms, and economic constraints. However, while cloth may provide a cost-effective solution, it also highlights the need for improved access to sustainable menstrual hygiene products to ensure better hygiene and health outcomes for women. This insight from the FGD underscores the importance of addressing menstrual health needs and promoting access to appropriate menstrual hygiene products to enhance the well-being and dignity of women in the community.

Disposal practices varied, with some washing and drying cloth materials (21.72%) and others disposing of materials in waste bins or open areas (1.87%). Hand hygiene practices after changing MH materials also varied, with some individuals consistently washing their hands with soap (10.99%), while others did so only most of the time (8.36%), sometimes (4.37%), or rarely (0.5%).

Water-related challenges significantly impacted MHM practices, with some individuals facing stress or difficulty most of the time (7.24%) or sometimes (6.62%). The main water issues contributing to these

challenges included a lack of privacy to wash cleanly (12.61%), low water quantity (10.11%), difficulty washing materials (9.61%), and poor water quality (2.25%).

MHM practices after migration 5.37% reported that managing their period had become easier others 7.12% found it harder, with the majority indicating that it remained the same (11.74%). These findings suggest that migration or displacement may have varied impacts on MHM practices, influenced by factors such as access to water, sanitation facilities, and cultural norms in new environments.

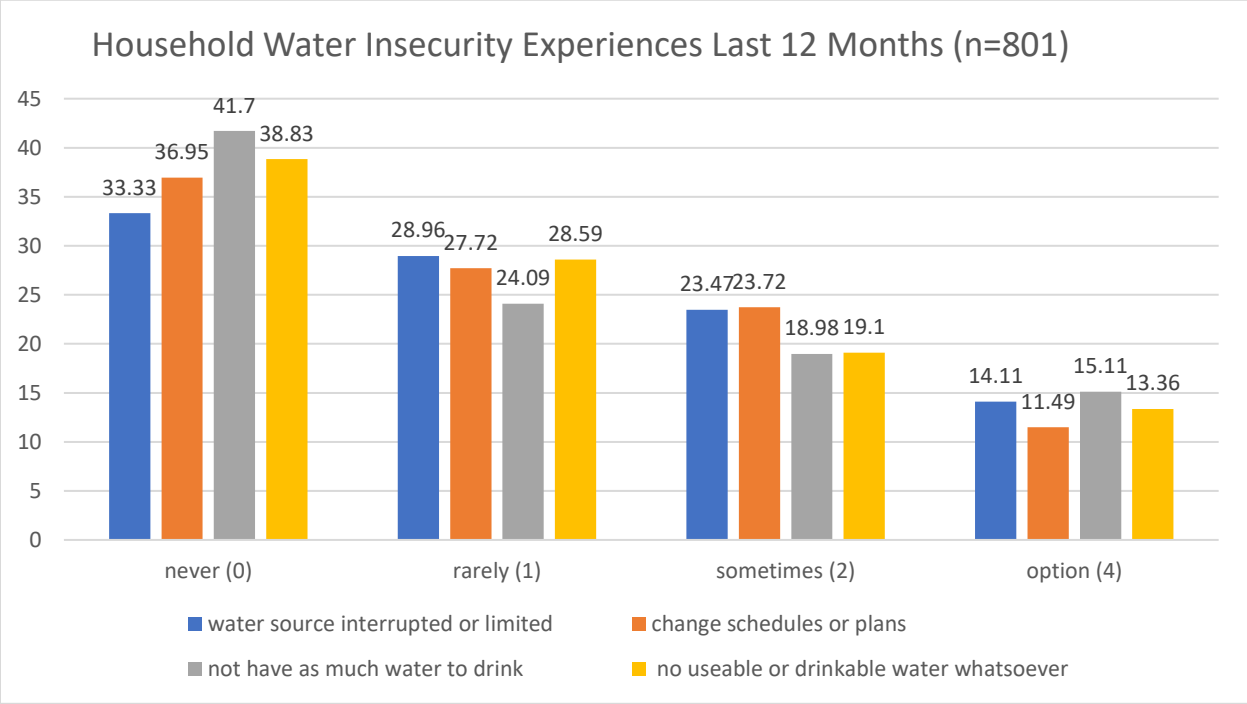



*Graph 12: after Migration Managing MHM*

The findings from the focus group discussion (FGD) indicate that in the immediate aftermath of the flood, managing menstrual hygiene became exceedingly challenging due to the lack of privacy and limited resources. Women had to resort to jointly going outside to change and wash their cloth menstrual hygiene items. Women jointly go outside due to concerns about privacy, safety, and access to clean water when managing menstrual hygiene. This collective approach ensures safety from potential risks, such as encountering dangerous animals or individuals, and may be prevalent in new places with shared facilities. Overall, it reflects adaptive strategies in challenging environments where traditional methods are not feasible.

However, following migration to a new location, the situation appears to have reverted to what it was before the flood. Despite the change in environment, women continue to face similar difficulties in managing menstrual hygiene, suggesting persistent challenges that need to be addressed. This continuity underscores the importance of implementing sustainable solutions to ensure adequate menstrual hygiene management for women, even in post-disaster settings.

## SECTION 6: HOUSEHOLD WATER INSECURITY EXPERIENCES (HWISE)




*Graph 14: Household Water Insecurity Experience*

## SCALE

The household survey focused on Household Water Insecurity Experiences (HWISE) and explored the frequency and impact of water-related challenges faced by respondents over the past 12 months. The survey reveals that concerns about water scarcity were prevalent among migrants, with a significant portion reporting worrying about not having enough water for their needs either rarely (25.47%), sometimes (22.1%), or often (18.73%).

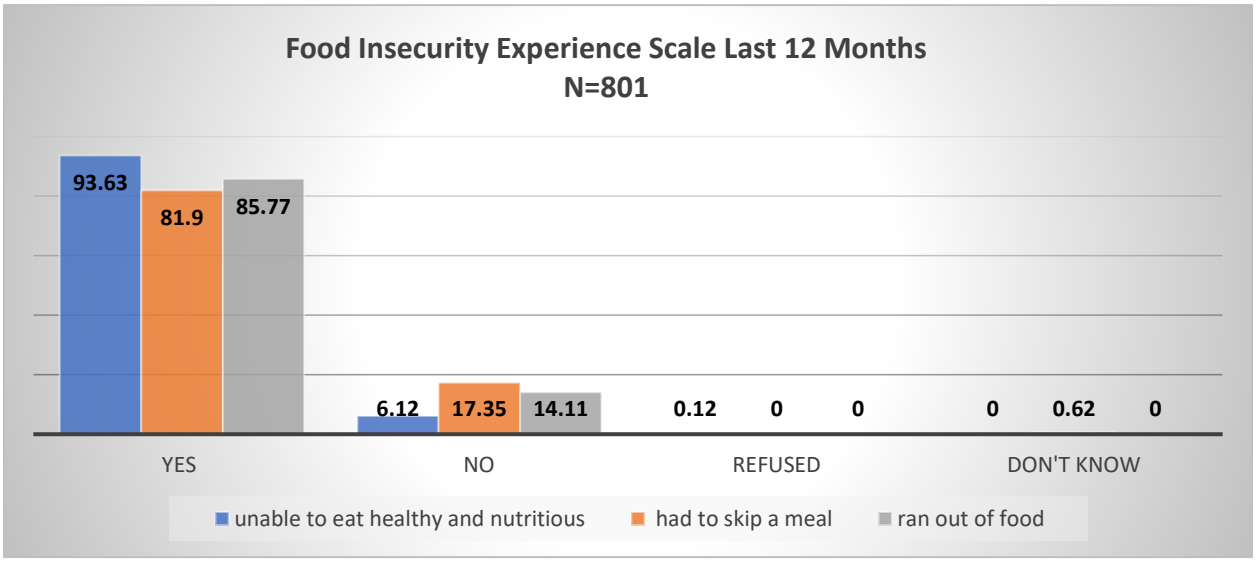
Access to reliable water sources was also a concern, as interruptions or limitations in water availability were also highlighted. While rarely 28.96% experienced interruptions or sometimes (23.47%), others faced more frequent challenges, indicating potential inadequacies in water infrastructure or supply systems. Water-related issues extended to household chores and activities, with respondents reporting instances where clothes could not be washed (27.97%), schedules or plans had to be changed (27.72%), or dietary habits were altered (27.84%) due to water problems.

Hygiene practices were also affected, as some respondents reported instances where they or household members could not wash hands (22.22%) or bodies (27.59%) due to water issues. Furthermore, access to drinking water was compromised for some, leading to instances of going to sleep thirsty (19.6%) or not having as much water to drink as needed (24.09%). Emotional and social impacts of water insecurity were evident, with respondents reporting feelings of anger (28.84%) or shame/embarrassment/stigma (23.97%) due to water-related problems. Additionally, some respondents experienced situations where usable or drinkable water was entirely unavailable (28.59%), highlighting the severity of water insecurity in certain contexts.

The findings highlight the multifaceted nature of household water insecurity experiences, encompassing concerns about water availability, interruptions in water access, challenges in maintaining hygiene, and emotional distress. Addressing these issues requires comprehensive strategies that encompass improvements in water infrastructure, access to clean water sources, hygiene promotion, and social support mechanisms to mitigate the impacts of water insecurity on individuals and communities.

## SECTION 7: FOOD INSECURITY EXPERIENCE SCALE

Food Insecurity Experience Scale, was aiming to understand the prevalence and impact of food insecurity within households over the past 12 months. The survey revealed significant concerns regarding food insecurity among respondents. A vast majority reported experiencing worry about not having enough food to eat due to a lack of resources, with 92.38% answering affirmatively. Similarly, 93.63% of respondents reported instances where they were unable to afford healthy and nutritious food, highlighting the challenge of accessing adequate dietary options.




*Graph 15: FOOD INSECURITY EXPERIENCE*

Moreover, a substantial portion of respondents reported limitations in food variety and meal skipping due to financial constraints. Around 94.01% reported eating only a few kinds of foods at times, while 81.9% had to skip meals due to insufficient resources. Additionally, 90% of people eat less than they thought they should because of financial limitations. The impact of food insecurity extended to instances where households ran out of food or members went hungry due to lack of resources. 85.77% of respondents reported instances where their household ran out of food, while 85.64% reported instances where household members were hungry but did not eat due to financial constraints. Alarmingly, 67.42% reported going without eating for a whole day due to lack of resources, underscoring the severity of food insecurity experienced by some households.

*"After our migration, prices skyrocketed, making even basic items like tea and sugar a luxury. Vegetables became a rarity. It's a nightmare we fear repeating every time the sky darkens with storm and clouds*."
Reviews in FGDs by the male participants village 45-p Teshil Khan Pur

The findings shed light on the pervasive nature of food insecurity and its detrimental effects on households' well-being. Addressing food insecurity requires multifaceted interventions, including income support programs, access to affordable and nutritious food, and social safety nets to ensure that vulnerable populations have access to an adequate diet.

*"After the floods, it felt like the whole world was against us. Our grains, the fruit of our hard work drown in an instant. With over all of our acres of crops destroyed, it was like watching our hopes and dreams wash away with the floodwaters. The irrigation canals we relied on were wrecked, cutting us off from markets and leaving us stranded. Months passed with real food needs, and relief only came in very slowly*"
Male FGD Participant village 181/7R Liaqat Pur

The household survey provides crucial insights into the prevalence and impact of food insecurity, highlighting the urgent need for targeted interventions to alleviate hunger and ensure food security for all members of the community. By addressing the root causes of food insecurity, policymakers and stakeholders can work towards building more resilient and equitable food systems.

The coping strategy employed in the face of food scarcity and inflation, particularly during the flood, involved a combination of adaptive measures aimed at ensuring the survival and well-being of vulnerable groups, such as the elderly, women, and children.

Women, often responsible for cook, managing food and household resources, faced increased challenges due to the loss of crops and disrupted access to markets after the floods. This heightened food insecurity affected children and the elderly, who are more vulnerable to malnutrition and health issues. Discussions likely centered around the differential impact on household members, emphasizing the need for targeted interventions to address the specific needs of vulnerable groups and ensure their well-being during periods of food scarcity and inflation. Men often spend much of their time outside the home, engaging in income-generating activities where they have opportunities to access food. Meanwhile, women, who typically stay home to care for children and elders, often prioritize the needs of their family members over their own dietary requirements, making sacrifices to ensure others are adequately nourished.

"Food shortage and unaffordability aren't just about physical hunger; it's about the continuous stress and anxiety for me of not being sure where my next meal will come from. It disturbs me and every aspect of my family life, from health to our ability to focus at farm work or children school and well-being.

Household Survey Female Participant shared with the onset of the flood, which notably impacted the entire tehsil, the elderly, women, and children found themselves grappling with significant challenges, including food shortages and limited access to meals. In Pakistani culture, gender disparities in food distribution are common during times of scarcity, with men often receiving priority. Migration

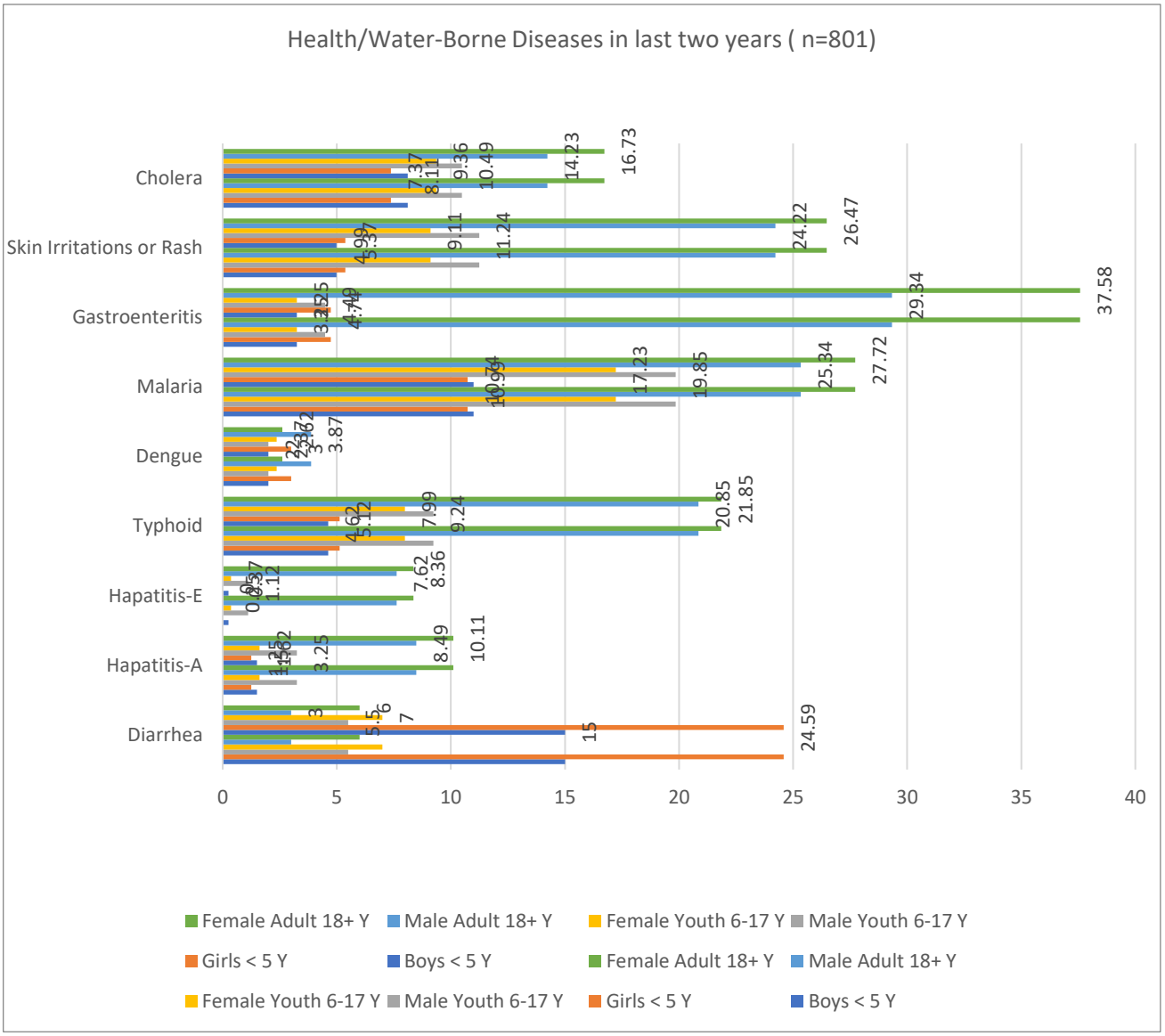
emerged as a potential solution to escape the flood's devastation, although it presented its own set of difficulties. Prior to the flood, the practice was to have three meals a day, but during the flood, the shortage of food forced them to reduce their meals to one per day or resort to using low-cost food options. Men used to go to search for any ration distribution site to avail food for their families. Furthermore, in situations where disabilities were present, the community rallied together to facilitate the evacuation of individuals with disabilities, underscoring a collective effort to ensure the safety of all community members. Additionally, the lack of proper sanitation facilities during the flood posed challenges for women, who had to make do with makeshift arrangements in dry areas. Despite these adversities, the priority remained on ensuring the well-being of vulnerable groups, particularly children and the elderly, by securing food and eventually migrating to safer locations. Overall, the coping strategy centered on community support, adaptive measures, and prioritizing the needs of the most vulnerable members during times of crisis.

The focus group discussions shed light on the significant challenges faced by the community before and after the flood. Prior to the disaster, life was relatively stable, with manageable food prices and sufficient access to essentials. Daily wage earners earned a decent income of 600 to 1000 rupees per day before the flood and now around 9 to 10 thousand per month. However, the flood brought about a drastic change, leading to a sharp increase in food prices. Items that were once affordable now cost as much as double, making it difficult for families to secure enough food. Livelihood came to an end, and everything became expensive. Flour, which was 4000 rupees mond before the flood, increased to 6000 rupees. Ghee, which was 250 rupees per kilogram, became 400 after the flood. The prices of everything increased. People had to work harder to earn a little more money. Sometimes they could afford food, sometimes they couldn't. They were just surviving. They fed their children instead of sometimes eating themselves. If they found work, they could cook something, otherwise not. Immediately after the flood, the prices of food increased. Due to the lack of resources, people controlled the birth of children. Because of the shortage of food, children would get sick. Females were also worried due to the scarcity of food. Females, due to the shortage of food, would give food to the children first but wouldn't eat themselves.

Employment opportunities dwindled, pushing some into borrowing money to survive. The flood not only disrupted food supply chains but also exacerbated existing economic vulnerabilities, leaving families struggling to cope with hunger and financial instability. Overall, the flood had a devastating impact on the community, plunging them into a state of increased hardship and vulnerability.

## SECTION 8: HEALTH/WATER-BORNE DISEASES

Prevalence of health and water-borne diseases over the past two years, shedding light on the demographic distribution and healthcare-seeking behavior of affected individuals. The survey findings indicate a significant incidence of various diseases within households. Diarrhea was reported by 24.59% of respondents, with the most affected groups children especially under five years girls. Similarly, Hepatitis A




*Graph 16: Age and gender wise Health experience of last two Years*

and E were reported by 23.1% and 16.85% of respondents, respectively, affecting mainly adult women and men.

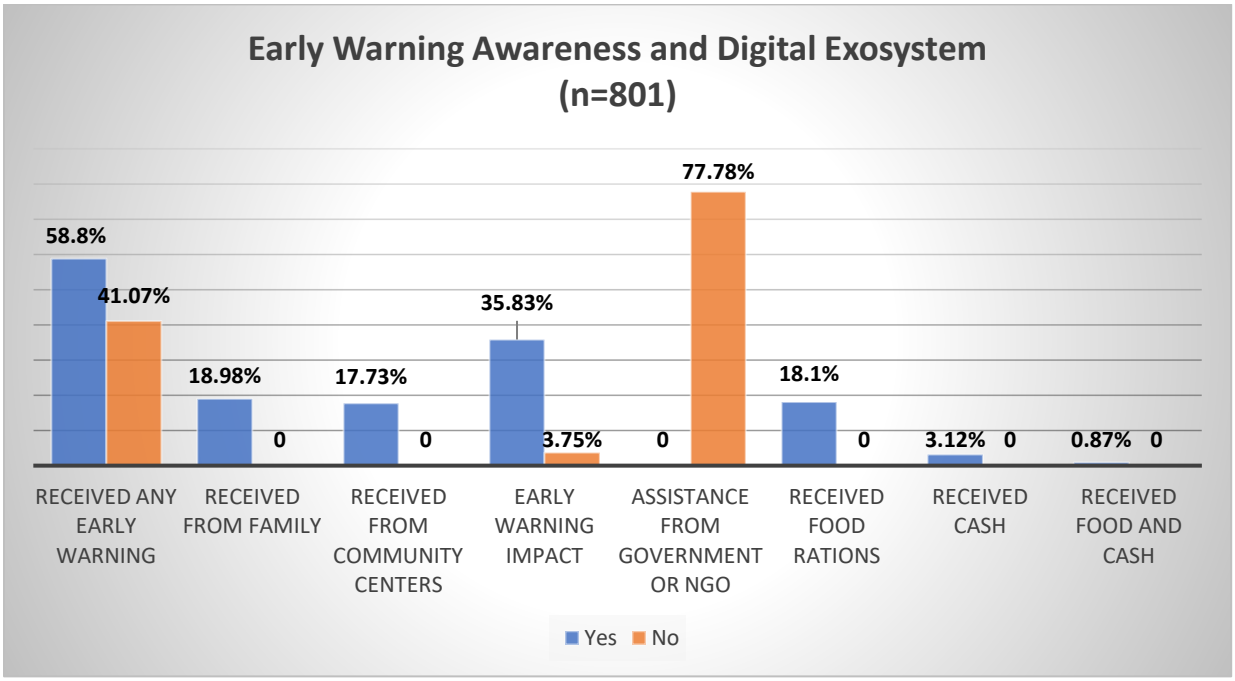
Typhoid was reported by 53.93% of respondents, predominantly impacting adult men and women as well as youth aged 6-17. Meanwhile, diseases like Dengue and Malaria affected 11.86% and 68.41% of households, respectively, with a higher prevalence among adults Furthermore, the survey highlights the incidence of Intestinal worms, Gastroenteritis, Skin irritations or rash, and Cholera, affecting 18.98%,

61.3%, 52.06%, and 45.32% of respondents, respectively. These diseases affected individuals across various age groups, with adults being the most affected.

Despite the prevalence of these diseases, the majority of affected individuals sought treatment, with 94.26% reporting hospital or clinic visits. However, a small proportion refrained from seeking medical help due to reasons such as the cost of treatment being too expensive, the unavailability of nearby healthcare facilities, or other personal reasons. The household survey underscores the burden of health and water-borne diseases within communities, particularly affecting vulnerable populations such as children and adults. The findings emphasize the importance of accessible and affordable healthcare services in addressing and mitigating the impact of these diseases on public health. Additionally, targeted interventions aimed at disease prevention and health education are essential for reducing the incidence and transmission of these illnesses within communities.

During the pre-flood focus group discussions (FGD), participants expressed sense of satisfaction with their daily lives, indicating that they had some access to basic nutrition and health care services with their daily lives. However, the aftermath of the flood brought widespread disruption and devastation. The sudden onset of floodwaters left communities vulnerable and psychologically shaken. With infrastructure damaged and resources scarce, individuals faced heightened risks to their health and well-being. Contaminated water sources, the lack of nutritious food, and unsanitary conditions precipitated the onset of diarrheal illnesses, malaria, typhoid fever, and skin rashes among the affected population. The abrupt and adverse conditions following the flood underscored the urgent need for comprehensive interventions to address health risks, restore essential services, and rebuild community resilience in the face of such calamities.

## SECTION 9: EARLY WARNING AWARENESS & DIGITAL ECOSYSTEM




*Graph 17: Early Warning Awareness and Ecosystem*

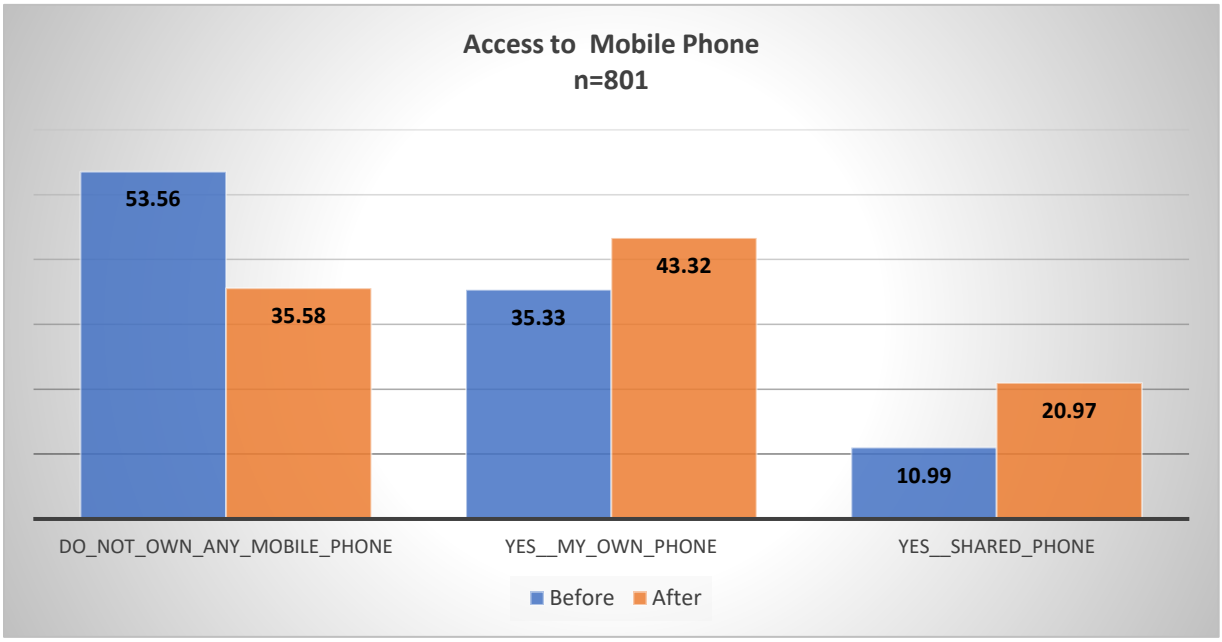
Survey focuses on early warning awareness and the digital ecosystem, exploring the dissemination of weather-related information, access to communication technologies, and preferences for receiving warnings about climate events. The findings reveal that 58.8% of respondents have never received early warnings about changes in temperature or extreme weather events, while 41.07% have received such warnings. Among those who received warnings, the most common sources were family members or neighbors (18.98%) and community centers, mosques & churches (17.73%).

Regarding the impact of early warnings, 35.83% of respondents reported that the warnings made a difference in how the weather event impacted them and their families. However, 3.75% reported that the warnings did not make any difference.

The accounts from the focus group discussions shed light on the critical role of early warnings in mitigating the impact of natural disasters like floods. Despite the challenges faced in disseminating information, particularly among low-income rural households with limited access to technology, the early warning system proved to be beneficial in prompting communities to take necessary precautions and evacuate to safer areas. Participants recounted receiving early warnings through various channels, including public announcements in villages, mosque loudspeakers, and mobile phone messages. For those who did receive the early warnings, it provided valuable time to gather belongings, including livestock, and move to higher ground or safer locations. This proactive approach helped safeguard lives and assets, minimizing the loss of property and reducing the risk of casualties. Moreover, the early warnings facilitated community coordination and support, as individuals shared information with each other to ensure everyone was informed and prepared.

Regarding assistance received from government or NGOs after migration or displacement, 77.78% reported not receiving any assistance, while 18.1% received only food rations, 3.12% received only cash assistance, and 0.87% received both food and cash assistance.

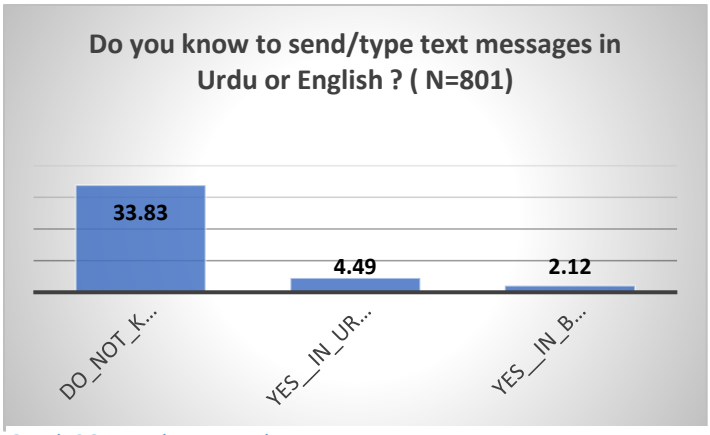
Based on the FGD information, there was limited awareness of government schemes or flood relief programs among the affected communities. The focus of the discussions primarily revolves around the immediate impact of the flood, the challenges faced during and after the disaster, and the need for assistance in rebuilding lives and livelihoods. The participants express concerns about the lack of government support in terms of early warnings, evacuation assistance, provision of shelter, education for children, healthcare facilities, and economic opportunities. They highlight the devastating effects of the flood on their homes, livelihoods, and overall well-being, and emphasize the urgent need for government intervention to address these issues. While some mention receiving early warnings from the government, there is no mention of specific flood relief programs or assistance provided by governmental or non-governmental organizations. The participants stress the importance of timely and accurate information, as well as tangible support in the form of shelter, food, healthcare, and livelihood opportunities. There was gap between the needs of the affected communities and the assistance provided by government agencies or relief organizations. The participants express a sense of vulnerability and dependency on external support, highlighting the need for comprehensive and coordinated efforts to address the long-term impact of the flood and support the recovery and resilience of the affected communities.




*Graph 19: Access to Mobile Facility*

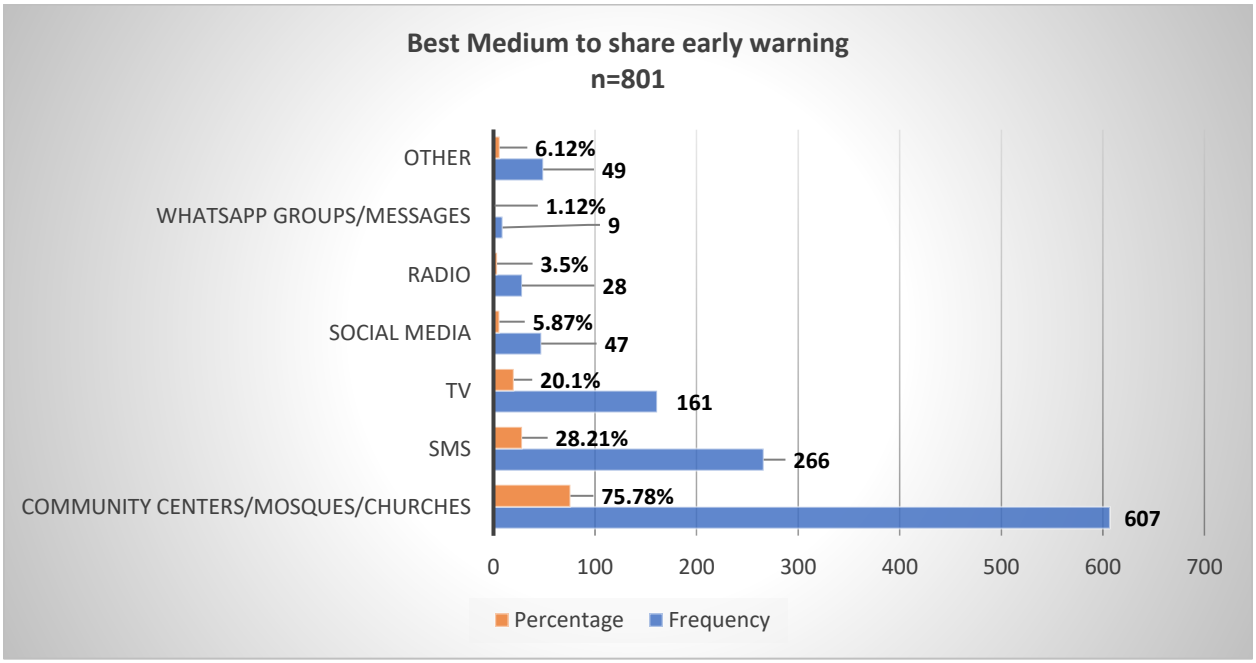
Regarding access to communication technologies, 35.33% of respondents owned their own mobile phones before flood and 42.32% after, while 10.99% respondants had access to shared phones before flood and 20.97% after. Additionally, 35.21% owned basic phones, and 5.24% owned smartphones.

Moreover, 33.83% of respondents did not know how to send/type text messages in Urdu or English, and 31.84% could not read messages in Urdu or English. When it comes to media usage, 30.84% of respondents reported not using any social media platforms, while 6.49% reported using social media during extreme climate events to share stories and early warnings.




*Graph 2O: People can send text messages or not*

As per FGD, a significant portion of respondents lack literacy skills, with a notable percentage unable to read or write messages in Urdu or English. This limits their ability to access information independently, especially through written communication channels like text messages. While a minority (mainly men) respondents reported using social media platforms like WhatsApp, TikTok, Facebook, and YouTube, the overall usage is low. Only a small percentage of respondents used social media, and their usage during extreme climate events is primarily for sharing stories and early warnings.




*Graph 21: Medium to share early warning system*

In terms of accessing news, 89.01% of respondents no longer had access to a TV after migrating, and 97.38% no longer had access to a radio. Despite this, 22.97% reported that radio channels provided coverage or warnings during climate extreme events. The survey underscores the importance of improving early warning systems and enhancing access to communication technologies, particularly among vulnerable populations and females affected by climate events and migration. Additionally, it highlights the need for diverse communication channels to effectively disseminate early warnings and ensure community preparedness and resilience.

The focus group discussions (FGDs) revealed diverse responses regarding the receipt of early warnings or advance notice about changes in temperature or extreme weather events. Participants recalled receiving warnings through various channels such as mobile phones, mosque announcements, and radio broadcasts, while others cited a lack of access to such information due to limited resources or cultural norms restricting women's mobile phone use

The focus group discussions showed gender differences in access to technology and information within the community. It was observed that mobile phone ownership is basically a tradition among men, with women lacking personal mobiles. Financial constraints were mentioned as a significant barrier, as acquiring and maintaining a mobile phone was supposed challenging due to limited resources. Consequently, women often rely on men for information dissemination, as there is less access to television in the area. Instead, men serve as the primary channels of information, relaying updates upon returning from outside. Additionally, traditional norms play a role in restricting women's access to mobile phones, with some households not allowing women from owning them. However, educated and assertive women expressed a desire for mobile phone access, recognizing its importance for communication and information sharing. Despite the challenges, there was unanimous agreement among women regarding the necessity of basic community structures such as schools, hospitals, and electricity for TVs in the community. Furthermore, while some women demonstrated literacy in reading Urdu messages, the majority relied on literate men to compose and send messages when necessary. Overall, the gender disparities in technology access and literacy, emphasizing the need for more inclusive communication strategies to ensure equitable information dissemination and empowerment within the community. Suggestions were made to improve early warning systems, including broadcasting messages through mobile phones or mosque loudspeakers. However, the effectiveness of early warning dissemination depended on factors such as access to technology, literacy levels, and community awareness. The women affected by the flood shared valuable insights and suggestions for improving the early warning system. They emphasized the critical need for timely and comprehensive information about impending disasters, suggesting that announcements should be made well in advance, preferably 12 hours to a day before the event. Recognizing the prevalence of mobile phones in their communities, they recommended utilizing this technology for alerts, advocating for voice recording calls to be sent to mobile phones with specific instructions on where to seek refuge during emergencies. Additionally, the women stressed the importance of community collaboration and effective communication networks, often relying on word of mouth to share news. They called for the establishment of accessible relief centers in safe locations, providing essential supplies and services during disasters.

Some women expressed a desire for education and awareness programs to learn how to use mobile phones and access information online, recognizing the empowering potential of knowledge in emergency situations. Furthermore, they highlighted the necessity of infrastructure improvements, such as stronger riverbanks and drainage systems, to mitigate the impact of floods. Ultimately, the women underscored the importance of government assistance and support in rebuilding homes, providing livelihood opportunities, and addressing socioeconomic challenges exacerbated by disasters. Their suggestions reflect a holistic approach to disaster management, encompassing communication, community engagement, education, infrastructure development, and government intervention.

While some participants acknowledged the benefits of early warnings in prompt evacuation and asset protection, others faced challenges in preparation and coping due to poverty, resource scarcity, and distrust in warnings. The distrust surrounding the early warnings appears to arise from multiple factors. Firstly, concerns were raised about the timeliness and adequacy of the warnings, with some received shortly before the disaster, leaving little time for preparation. This led to doubts about their effectiveness and whether they were sufficient for taking necessary precautions. Additionally, past experiences where warnings were either inaccurate or insufficient may have contributed to a lack of trust in the warnings' credibility, influencing the perception that they were not to be taken seriously. Moreover, issues related to accessibility and communication channels were highlighted, with some individuals not being at home or lacking access to mobile phones to receive warnings, further exacerbating feelings of unpreparedness and skepticism. Furthermore, doubts regarding the credibility of the sources providing the warnings, whether it was the government, NGOs, or other organizations, may have also played a role in shaping perceptions of their reliability. Overall, the distrust seems to stem from a combination of factors related to the timeliness, adequacy, accessibility, and credibility of the warnings, as well as past experiences influencing perceptions of their effectiveness.

Dissatisfaction was expressed with the assistance received post-migration, emphasizing the need for comprehensive support, improved coordination between government and NGOs, and proactive measures to mitigate future disasters. The women said that *there was no time for prior information. Before we could think about it, the floodwater had entered our homes. We barely managed to save ourselves and came out of our homes. Later, we retrieved the remaining belongings from our homes using boats.* Shared by women FGD participants of village Barohi Baloch.

*The government shared the early warnings, but we didn't make any arrangements. We have to rescue ourselves and the children to relocate on safe places. We had no idea that the water would rise so much, so we didn't leave the place. However, the flood got worse, and we lost everything. We request the government to listen our voice to solve our problems, provide us with a house, arrange for electricity, and create employment opportunities. In times of difficulty like this, please arrange for food. We were not prepared for this flood. Inflation has increased more than before, everything is gone, and we had no courage left to face the challenges. We are not ready for any future disaster due to prices hike, and without land, property, or livestock unavailibility. We are surviving on corn flour, with no money for wheat. If the flood comes again this year, we won't be able to cope. We are dying of hunger, and we don't have money for treatment either*. Shared by women FGD participants of model village Lal Shah.

Mobile phones emerged as a crucial medium for information dissemination, with basic mobile phones being more prevalent than smartphones, especially among women. Despite challenges such as signal disruptions, mobile phones remained the preferred and most accessible medium for sharing early warnings and informing communities about natural disasters.

## DISTRICT INSTITUTIONS AND THEIR RECOMMENDATIONS

This study reflects on how climate change influences human mobility and is forcing people to make long-term and permanent migrations. The longer it takes to tackle the causes of climate induced migration, the greater the resulting economic, social, political and institutional challenges will manifest. The

stakeholders' perceptions suggest that knowledge among stakeholders responsible for disaster response and recovery regarding the direct relationship between human mobility and climate change impacts is limited and negligible. It was only after breaking down specific climate change impacts on various sectors. and establishing cause and effect relationships that the stakeholders were able to answer questions directed at them and to suggest possible solutions. To obtain in-depth analysis and the views of relevant authorities of the planning and institutional arrangements at a district level, to cater to the needs of communities and local people engaged in climate induced migration.

In times of crises, the Agriculture Extension Department has been actively involved in addressing food security challenges. Their initiatives primarily focus on establishing demonstration plots in various locations to showcase effective agricultural practices. Through these efforts, the department aims to reduce dependency on imported edible oil-producing commodities. The government of Punjab plays a crucial role in supporting these endeavors. During a specified period, the region faced a locust attack, prompting the government to provide assistance in terms of spraying and machinery. Despite the department's proactive measures with staff already in place, external support was crucial in mitigating the impact of the locust invasion. However, the challenges intensified with flooding, leading to food shortages affecting both humans and animals. Displacement of people and migration became widespread, exacerbating the difficulties caused by reduced water levels in rivers.

During the peak of the COVID-19 pandemic in 2020, Human Development Foundation actively engaged in providing support to the affected population. The organization's Village Development Organizations (VDOs) and healthcare initiatives played a vital role in social mobilization, ensuring that communities had access to preventative measures and health education. HDF's eight Community Health Centers contributed to improved general health behaviors through health screenings and seminars. In the face of heavy rainfall and floods that occurred in 2022, HDF swiftly mobilized resources to address the extensive damages and challenges faced by communities. The organization's initiatives, such as the Swat Relief Initiative (SRI) Project and the Ghazi Minara Project, played a pivotal role in social mobilization, providing healthcare services, raising awareness, and contributing to reduced infant and under-five mortality rates. Local on-ground organizations faced some challenges in coordination after the floods. The lack of clear planning and initial actions led to difficulties in response efforts. While some actions were taken by different departments, the coordination and communication between them were not fully effective. There were mentions of efforts initiated by the DC office, education department, administration, and other departments, but the overall coordination seemed to lack a comprehensive strategy. For example, there were instances where actions were not initiated until after the disaster hit, and there were delays in setting up control rooms and health camps. Regarding communication with other organizations or government counterparts, there were indications of limited collaboration and information sharing. Some NGOs had to wait for approval, which delayed their relief efforts. Additionally, there were instances where organizations had to stop working due to the lack of necessary permissions or NOCs. Identifying areas that needed the most help also seemed to be a challenge. While there were mentions of pre-identified vulnerable areas, such as those along river belts, the effectiveness of these identifications in directing relief efforts was not explicitly discussed. Overall, it appears that there is room for improvement in the activation and coordination of local on-ground organizations after disasters. Clear planning, effective

communication channels, and collaboration with various stakeholders, including government counterparts and NGOs, are essential to ensure a more efficient response and avoid duplication of efforts.

Since 2018, On-Farm Water Management has played an essential role in mitigating the impact on farmers and their livelihoods. The implementation of two key projects, namely the construction of water courses and the management of highly efficient irrigation systems, has significantly transformed the agricultural landscape. One notable outcome is the provision of solar panels for water storage ponds and the adoption of drip irrigation systems by farmers. As a direct result of these initiatives, farmers have become more attuned to the realities of climate change, actively opting for drainage irrigation systems, and constructing ponds for water storage based on the information provided. The shift in agricultural practices demonstrates a heightened awareness of the need for sustainable water management and adaptation to changing environmental conditions. During the 2022 floods, the On-Farm Water Management department focused on addressing the impact of the disaster on water courses infrastructure. However, they did not have specific information on the individuals affected or the effects of migrations caused by the floods. The department primarily relied on data managed by PDMA (Punjab Disaster Management Authority) and the district government, which maintained detailed databases and updated information on a regular basis. It appears that the department's response was more reactive than proactive, with preventive measures being initiated later after the disaster hit the villages. There was no immediate data available on the early actions taken, and the department implemented its actions based on instructions from senior management and the district government. While the department considered climate change in developing new projects, such as high-efficiency irrigation systems, there seemed to be a lack of preparedness in terms of addressing the migration of affected communities or providing assistance to host communities. The focus appeared to be on managing infrastructure and adapting agricultural practices rather than addressing the broader societal impacts of the floods. On-Farm Water Management department's response during the 2022 floods was primarily focused on managing water infrastructure and implementing measures to minimize agricultural losses, with limited involvement in addressing the broader social and humanitarian aspects of the disaster.

In terms of disaster preparedness, Dr. Aadil Rehman the district emergency officer of rescue 1122 emphasized that they are always prepared for their rescue response in disasters. He also serve as the Secretary PDMA (Provincial Disaster Management Authority), coordinating activities related to PDMA's initiatives. They do plan and conduct mock exercises on regular basis to address potential flood or drought situations, although funding constraints may pose challenges. Political interest and government plans are in place to address climate change, and rescue 1122 actively collaborates with the district government to monitor and implement these plans.

As per his observation he shared that "The PDMA consistently provides timely flood and rain alerts to both local authorities and communities. However, the media tends to amplify these alerts. The apparent disparity between the consistent provision of timely flood and rain alerts by the PDMA and the reported lack of early warning or disaster information by more than half of the respondents indicates a potential gap in communication and dissemination to the communities. Several factors may contribute to this gap. Firstly, challenges in accessibility and reach, particularly in remote or marginalized areas, may hinder the effective dissemination of alerts. Additionally, issues of reliability and trust could undermine the perceived

credibility of the alerts among the population. Even if alerts are issued, communities may not take them seriously or act upon them if they do not trust the source. Furthermore, while the media may amplify alerts, this may not always translate into effective dissemination of actionable information to the communities. Bridging this gap requires leveraging diverse communication channels, investing in local outreach and engagement efforts, improving coordination between government agencies and community organizations, and conducting regular assessments to identify areas for improvement in early warning systems and communication strategies.

Rural effected communities often resist relocation during floods due to a mix of practical, cultural, and economic factors. Financial constraints, strong connections to their land and livelihoods, and the fear of losing agricultural assets and local income sources deter them from shifting. This reluctance stems from the prospect of abandoning not only homes but also vital aspects of their identity and sustenance, such as agriculture and livestock.

National Rural Support Program's (NRSP) comprehensive response to crises, particularly focusing on flood-related efforts since 2001. Engaging in relief work and disseminating early warnings, NRSP collaborates with the government, local authorities, and district-level programs to monitor and manage flood situations. Despite challenges like the COVID-19 pandemic and locust attacks, NRSP continues diverse initiatives, including education, microfinance projects, solar initiatives, and health programs. The ongoing Three Tears Local Support Organizations (LSO) program empowers local communities, while projects like artificial limbs and water tests address health and water issues. NRSP emphasizes the need for organizations addressing water-related challenges and comprehensive government efforts to tackle inflation, reduced local production, and increased healthcare costs. The organization's mobilization and disaster preparedness efforts contribute to a holistic approach addressing education, economic stability, healthcare, and community needs. “It is not in any government department’s mandate to approach the Climate Induced Migration issue but they respond to affected populations of flood and drought. NRSP also respond through services for vulnerable people.”

During crises like the 2022 flood, the Social Welfare department conducts assessments to understand the impact on the community. This includes evaluating damage to infrastructure, agricultural losses, and the overall well-being of the affected population. In collaboration with NGOs, the Social Welfare Department provides humanitarian assistance to those affected by disasters. This assistance includes the distribution of essentials such as food, water, and other necessities to mitigate the immediate impact on the community. The department ensures an inclusive approach, addressing the needs of all individuals without discrimination based on religion, ethnicity, or gender. Collaboration with NGOs is a key aspect of their strategy to enhance the impact of social welfare initiatives. “Climate change is a global issue and needs global collective efforts. INGO. NGOs should also play its role and provide support mechanisms through public-private sector engagement to help people migrating.”

Mobile Veterinary Department (MVD) in Cholistan, emerges as a lifeline for rural communities, especially farmers grappling with climate-related challenges. Mobile unit to provide essential veterinary services to Cholistan farmers. Immediate needs of livestock, offering vaccinations, first aid, and care. The MVD

collaborates with government initiatives, including projects like installing solar panels to ensure water availability during times of scarcity. The recent drought has heightened challenges, leading to water and food shortages, impacting livestock health and local economies. Despite resource limitations, the MVD actively engages in community outreach, raising awareness about disasters and promptly relaying early warnings to relevant authorities. Their work underscores the vital role of grassroots efforts in addressing the complex impact of climate-induced crises on Cholistan farmers and their livelihoods.

National Commission for Human Development's activities and challenges faced during crises. Operating in Rahim Yar Khan since 2003, NCHD focuses on primary education, adult literacy, and community development. Collaborating with the Benazir Income Support Programme, NCHD is involved in the National Socio-Economic Registry survey, registering children for attendance-based stipends. Rahim Yar Khan, prone to flooding, witnessed the impact of the 2022 flood, affecting livelihoods and agriculture.

Key Informants highlighted the gendered impacts of floods and emphasized the importance of reaching women, children, and other vulnerable groups. They discussed how disasters disproportionately affect women and children due to their roles and responsibilities within households and communities. For example, women often bear the brunt of caregiving responsibilities, including caring for children, the elderly, and the sick, during and after disasters. Additionally, they may face heightened risks of gender-based violence and exploitation in displacement settings. Key Informants recognized the need to consider gendered vulnerabilities in disaster preparedness, response, and recovery efforts. They emphasized the importance of tailoring interventions to address the specific needs and priorities of women, such as access to reproductive health services, safe spaces, and livelihood opportunities. Key Informants also discussed strategies for reaching women and other vulnerable groups, including through targeted outreach, community engagement, and the involvement of women's groups and organizations in decision-making processes. Overall, they recognized the critical role of gender-sensitive approaches in promoting resilience and reducing the impacts of disasters on women, children, and other vulnerable populations.
“Quote from Mr. Attiq ur Rehman, Regional Program Manager Human Development Foundation (HDF), women, who are often the most affected, are living in their homes without having mobiles, TVs or radio. If mosques loud speakers are utilized, important information can reach them.”
“Quote from Dr. Adil Rehman, District Emergency Officer Rescue 1122, Indeed, water-borne diseases surged in 2022 due to heavy rainfall, especially affecting children. Areas like ours witness a high incidence of hepatitis cases.”

## STAKEHOLDER’S RECOMMENDATIONS

**Capacity Building:**

1. Provide training and awareness to rural farming community to cope with unforeseen circumstances of Climate change and techniques to cultivate flood/drought-tolerant crops to resist the situation.

**Government Response:**

2. PDMA (Provincial Disaster Management Authority) has the potential to provide timely and accurate information about disasters, there may be a need for further capacity building to

enhance their capabilities in this regard. This could involve investing in training programs, upgrading technological infrastructure, and improving coordination mechanisms to ensure the issuance of authentic warnings, particularly in advance of potential disasters. By strengthening their capacity, the PDMA can minimize damage by providing early and reliable information to communities and relevant stakeholders, enabling them to take proactive measures to mitigate risks and enhance preparedness.

3. Develop solutions to ensure effective communication and access to early warning systems and information in remote areas. This could involve exploring alternative digitized communication methods or infrastructure improvements to reach vulnerable communities.
   Both government and non-government organizations should prioritize raising awareness, followed by implementing control measures and finally executing plans for effective water management and food quality control.
4. Focus on water management strategies for both drinking water and agricultural purposes, emphasizing water preservation and reducing water usage during times of shortage to enhance crop production.
5. Establish coordination mechanisms in advance to ensure preparedness when disaster information becomes available. This includes maintaining a list of NGOs working in relevant thematic areas to understand their mandates and facilitate collaboration.
   Implement water projects to address water scarcity issues, particularly in drought-prone areas like Cholistan. Prioritize tree plantation initiatives to combat deforestation and improve environmental sustainability. Resolve sanitation issues to ensure public health and hygiene.
   Ensure adequate funding is allocated to both government and non-government organizations for climate change adaptation and disaster preparedness initiatives. Strengthen government departments responsible for climate change-related activities to ensure proper implementation of measures. Develop a database for preventive measures related to climate change and disaster management on forecasting, awareness campaigns, organizational structures, and funding sources to facilitate effective planning and response.

**Community Awareness:**

1. Limited literacy and access to technology, particularly among marginalized groups such as women, several strategies can be employed. Firstly, incorporating audio messages alongside text-based communication can ensure inclusivity for individuals with low literacy levels or visual impairments. These messages, disseminated by religious leaders through sermons or recorded formats, can reach a broader audience. Additionally, community engagement initiatives should involve local leaders, including women leaders, to ensure information reaches all members, regardless of their technological access. Utilizing existing community networks, such as women's groups and local radio stations, can also enhance outreach efforts to those without mobile phones or social media. Targeted awareness campaigns focused on women, children, elder peoples, delivered through mediums like posters, flyers, and community events, can further reinforce the importance of preparedness and provide actionable guidance in disaster situations. Through these approaches, emergency

communication efforts can become more inclusive, effectively reaching all segments of the population, including women and those facing technological barriers.

2. Implementing awareness campaigns and establishing notable chambers through public-private partnerships aim to mitigate the impact of recurring riverine floods and droughts. These initiatives involve distributing informational materials, organizing community seminars, and leveraging media channels for outreach. Notable chambers facilitate collaboration between government agencies, NGOs, businesses, and communities to develop comprehensive disaster strategies. Investments in infrastructure and sustainable agriculture are key components of these partnerships.
3. Enhance awareness among communities about coping strategies for flood and droughts, as relocating livestock to areas with adequate fodder and water. Strengthen routine vaccination programs for livestock, including cattle, goats, and sheep, to mitigate disease outbreaks. Regular vaccinations help reduce the impact of diseases, but there is a need to increase awareness among the population regarding the importance of vaccination.

   Provide assistance to host communities to effectively settle migrants displaced by climate-related issues. This support can include resources for infrastructure development, social services, and capacity building to manage the influx of people fleeing from disaster-affected areas.
4. Implement measures to increase public trust in early warnings issued by DDMA/PDMA. This could involve public awareness campaigns highlighting the reliability of PDMA warnings and the importance of heeding evacuation notices. Distrust in early warnings systems from concerns about their timeliness and adequacy, past experiences of inaccurate or insufficient warnings, and accessibility issues such as lack of mobile phones. People also shared Doubts also arise from the credibility of sources providing warnings, including government and NGOs, shaping perceptions of their reliability. Overall, the distrust is influenced by various factors including timeliness, adequacy, accessibility, and credibility of the warnings, as well as past experiences.

**Community Empowerment:**

5. Adoption of climate-resistant crop, water management system, technology and mechanization of agriculture to enhance resilience to climate change.

Need to engage communities at the grassroots level by forming community emergency response teams within union councils and villages. These teams would play a pivotal role in disseminating essential knowledge on disaster and risk identification prevention and response.

**6.** Address issues related to displacement caused by climate change, including providing assistance to climate-induced migrants and addressing improper settlement practices, such as building homes in flood-prone areas. This requires joint efforts between the government and private organizations.

**Community Awareness:**

**Community Empowerment:**

**Government Response:**

**Government Response:**

**Government Response:**

**Community Awareness:**

**Government Response:**

**Community Awareness & Government Response:**

## CONCLUSION:

Climate change and climate-induced migration have represented a multifaceted threat to human security in Pakistan. As the temperature rises, extreme weather events become frequent, and the water resources become scarce, pushing the vulnerable communities to the brink. This environmental stress eventually exacerbates society's social, economic, and political challenges and leads to conflicts, displacement, and a decline in the well-being of the concerned population.

This study examines the various ramifications of climate change on both rural and urban livelihoods. The loss of livelihoods resulting from frequent floods or droughts triggers migration in multiple directions, with both adverse and beneficial outcomes. In rural areas, extreme weather events diminish agricultural productivity and profitability, impacting farm employment and incomes, particularly for landless agricultural laborers and sharecroppers. The resulting decrease in income, loss of livelihood assets like livestock, and heightened debts contribute to food insecurity and malnutrition, compelling people to migrate due to inadequate access to welfare programs and public services. In addition, findings also underscore people's limited capacity to adapt and respond to climate change challenges, exacerbated by the absence of effective early warning systems and sufficient infrastructure to cope with extreme weather events, leading to heightened vulnerabilities that significantly affect livelihoods and coping mechanisms.

The information collected also reveals that displaced rural to rural, rural to urban and urban to urban communities are not well prepared to cope with floods and droughts, lacking the necessary training, knowledge of risks, and information about expected losses of life and livelihood assets. Despite the economic benefits and reduction in livelihood vulnerabilities observed among migrant families engaged in informal businesses and other economic activities, climate-induced migration is likely to disproportionately affect women's well-being, particularly concerning health access and social support. Institutional inefficiencies, such as bureaucratic hurdles and political influences, hinder effective response and preparedness efforts during extreme climate events, underscoring the need for institutional reforms to address vulnerabilities and support affected communities. However, the study also highlights the positive aspects of migration, such as improved family incomes and increased engagement of migrant women in income-generating activities.

In the light of the information collected comprehensive framework should be developed to address the multifaceted challenges posed by climate-induced migration. At the community level, initiatives such as awareness campaigns, livelihood diversification, and specialized support for vulnerable groups like lactating and pregnant women are crucial steps towards enhancing resilience and adaptation. Moreover, investing in education and training opportunities, strengthening early warning systems, and ensuring legal

protections for migrants are essential components for safeguarding communities against climate-related risks. At the government, stakeholder, and institutional level, measures such as establishing migrant registration systems, integrating migrants into social protection schemes, and fostering public-private partnerships underscore the collaborative efforts needed to mitigate the impacts of climate-induced migration. Furthermore, long-term planning, infrastructure reconstruction, and improved coordination among relevant authorities are imperative for building community resilience and ensuring effective disaster response and recovery. By implementing these recommendations, policymakers, stakeholders, and communities can work together to address the complex challenges of climate-induced migration and foster sustainable development in vulnerable regions.

It is recommended to make communities aware of how to store excess water, promote crops that can withstand drought conditions, in addition, training programs are suggested to prepare communities for unexpected situations and evacuation, which can significantly reduce damages. It is also suggestion for host communities to offer suitable places for affected individuals during disasters and to avoid building homes in areas prone to disasters. In this effort, religious leaders like mosque imams can play a role in spreading awareness. Financial assistance or loans are proposed to help people prepare for disasters, emphasizing the importance of early warnings from organizations like PDMA. Effective institutional support, including timely assistance and enhanced knowledge and skills of government institutions, is essential to mitigate risks and vulnerabilities associated with climate change.

# 7. RECOMMENDATIONS

Following recommendations are made to address the challenges face due to climate induced migration

## A- Community Level:

1- Initiate Awareness raising campaigns on climate change, disaster prevention and preparedness for the communities so that people can make arrangements what to do at the time of disasters.
2- Promote livelihood diversification to reduce dependence on climate-sensitive. This could include training programs for alternative income-generating activities like climate smart agriculture, or small-scale enterprises.
3- Enhance the capacity of the communities to support climate-resilient agriculture and integrated water management to secure essential water reserves for both human and livestock needs.
4- Lactating and Pregnant women facing migration due to climate change need special support, including free prenatal supplements, access to delivery spaces, and medical treatments. Government and NGOs should include special food items and supplements in ration packages to ensure their well-being during and after migration
5- Women needs sanitary pads during disasters. This special need is greatly ignored which causes a lot of stress among them. Such topics are taboo in our society which make women them more vulnerable
6- Provide education and training opportunities for males and especially for female climate migrants to build their skills and capacity for adaptation and resilience. This could include vocational

training, entrepreneurship programs, and access to information and technology about climate change and its impacts.

7- Invest in early warning systems for climate-related disasters to help communities prepare for and mitigate the impacts of extreme weather events reduce the need for emergency migration and displacement.
8- Strengthen legal protections for climate migrants, including mechanisms for recognizing and addressing their specific needs and vulnerabilities and treated with dignity and respect.
9- Enhance accessibility to healthcare, education, and critical amenities, including potable water, to mitigate the negative effects of climate change.
10- Enhance dissemination of climate and weather forecasts (e.g., alerts for heavy rainfall, floods, and droughts) and implement preemptive measures across public sectors for improved responsiveness and readiness

## B- Govt./Stakeholders and Institutional Level:

1- Set Up and System to register migrants to understand how and why people are moving within the country and make better decisions about policies and actions based on this information.
2- Incorporate vulnerable migrant households (both in their areas of origin and destination) into the National programs to facilitate their inclusion in social protection schemes and assistance distribution programs at the national and local levels, such as

- Benazir Income Support Programme (BISP)
- Ehsaas Program
- Punjab Educational Endowment Fund (PEEF)
- Punjab Khidmat Card Program
- Punjab Social Protection Authority (PSPA) initiatives
- Punjab Workers Welfare Board (WWB) schemes
- Punjab Zakat and Ushr Department programs
- Punjab Free Health Insurance Scheme
- Punjab Rozgar Scheme

3- Provide financial support to both climate migrants and host communities to facilitate adaptation and resettlement for infrastructure development, livelihood programs, and social services.
4- The government help the local communities to reconstruct the local infrastructure i.e. schools, roads, houses etc. so that they can return to their everyday lives.
5- Public-private partnerships are proposed to respond effectively to floods and droughts, alongside calls for advancements in early warning systems.
6- NDMA/PDMA along with DDMA would develop a long-term plan align with climate change induced migration communities during disasters and strategies to build community resilience.
7- Innovative early warning system along with local methods such as announcement in local languages through mosques, SMS service and radio should be used to inform people about floods at district, Tehsil, Union Council and village level to keep the communities aware of information about impending floods so that they can evacuate on time.

8- Areas prone to flooding should be declared non-residential areas and communities should not be allowed to settle along Indus River. For that purpose, communities should be provided with land ownership to build their houses at safer places.
9- Improvements in forecasting systems, technology, and Human Resource capacity to enhance trust in early warnings.
10- Strengthen coordination among federal, provincial, and local level departments concerned during extreme events to rehabilitate communities properly.
11- Stakeholders should enhance awareness regarding climate-induced migration to policymakers at national, provisional and local level urging policy adjustments to tackle the social and economic hardships and obstacles experienced by migrant families.

## Annex: A "List of KIIs"

| S No | Name | Position | Organization/Department |
|---|---|---|---|
| 1 | Mr. Kashif Ahmad | Deputy Director | Agriculture Extension Department |
| 2 | Mr. Rana Sajjad | Deputy Director | Social Welfare |
| 3 | Dr. Adil Rehman | District Emergency Officer | Rescue 1122 |
| 4 | Mr. Attiqur Rehman | Regional Program Manager | Human Development Foundation |
| 5 | Mr. Javed Razzaq | Deputy Director | National Rural Support Organization |
| 6 | Mr. Zia-ul-Qadir | District Director Operation | National Commission for Human Development |
| 7 | Muhammad Usman | Deputy Director | On-Farm Water Management |
| 8 | Dr. Khalid Munir | Veterinary Assistant | Mobile Veterinary Department |
| 9 | Mr. Irshad Ahmad | Assistant Director | Environment Protection Authority |
| 10 | Rana Riasat Ali | Additional Deputy Commissioner (Coordination) | District Administration |

## Annex: B “List of FGD Villages”

| S. No. | Tehsil | Village | Responder Gender | No. of Responders |
|---|---|---|---|---|
| 1 | Khanpur | Barohi Baloch | Female | 13 |
| 2 | Raheem Yar Khan | Tiba Ghareeb Shah | Male | 7 |
| 3 | Sadiqabad | Shair Muhammad | Female | 12 |
| 4 | Khanpur | Basti Langi War | Female | 13 |
| 5 | Khanpur | Hareer | Female | 13 |
| 6 | Sadiqabad | Jan Muhammad | Female | 10 |
| 7 | Liaqatpur | Model village Lal Shah | Male | 12 |
| 8 | Liaqatpur | Model village Lal Shah | Female | 14 |
| 9 | Liaqatpur (Cholistan) | 179/7R | Female | 14 |
| 10 | Liaqatpur (Cholistan) | 181/7R | Male | 10 |
| 11 | Raheem Yar Khan | 52/P | Male | 8 |
| 12 | Khanpur | 45/P | Male | 8 |