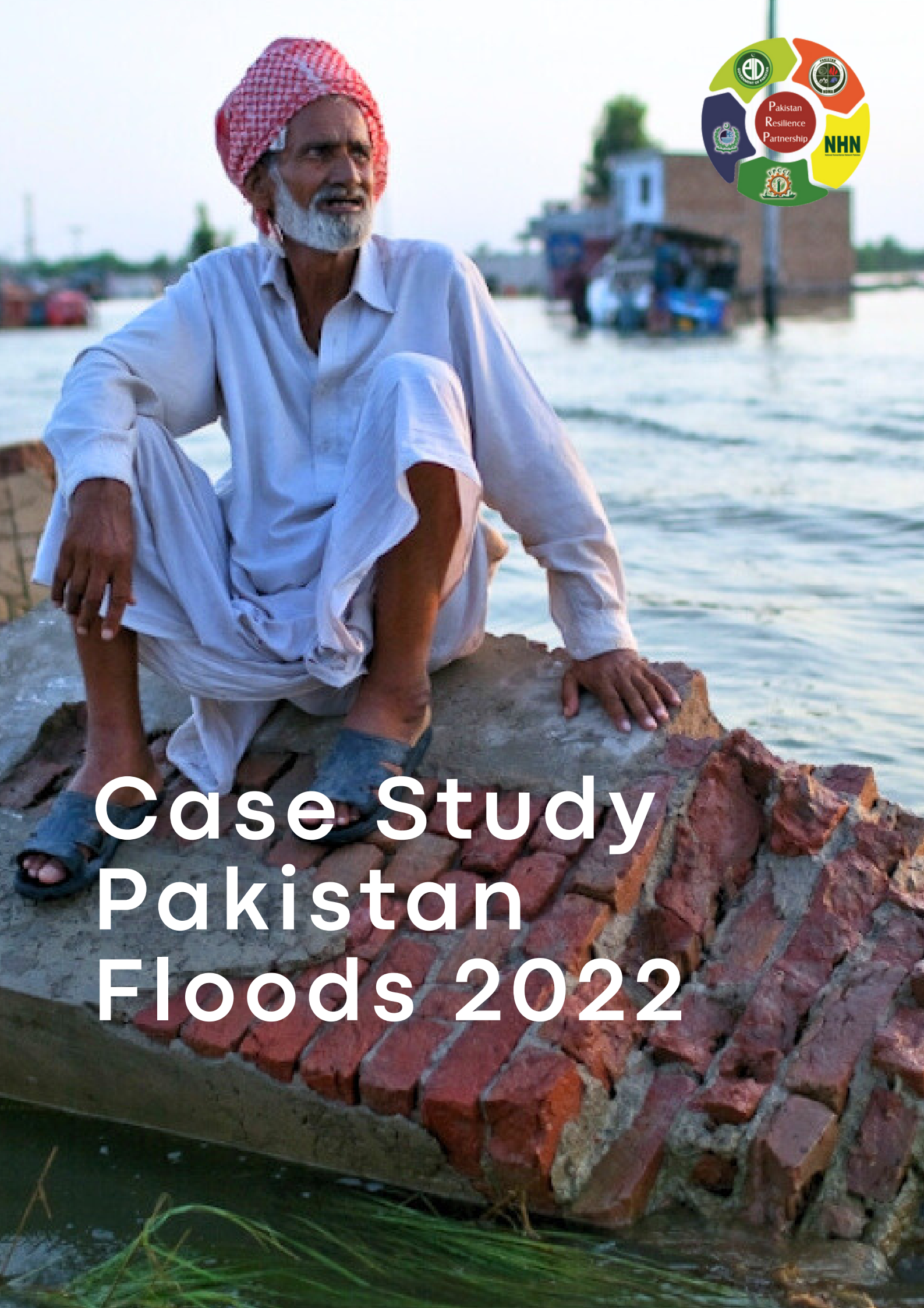

Case Study Pakistan Floods 2022

The Asian Preparedness Partnership (APP) is a unique multi-stakeholder regional partnership established by its founding member countries which include Cambodia, Myanmar, Pakistan, Philippines, Nepal, and Sri Lanka. Formed in 2017 with technical and secretariat support from the Asian Disaster Preparedness Center (ADPC) as well as assistance from the Bill & Melinda Gates Foundation (the Foundation) and the United States Agency for International Development Bureau for Humanitarian Assistance (USAID BHA). Its goal is to achieve ‘‘safer and well-prepared communities through locally led disaster risk management (DRM) actions, so that disaster impacts on at-risk communities of Asia will be reduced”.

APP strives to improve stakeholder coordination and dialogue between governments, local humanitarian organization networks, and the private sector to enhance capacities through partnerships, knowledge resources, training, and networking opportunities. The APP serves as a network of networks connecting these key local actors who are working on emergency response and disaster risk management at the national and sub-national levels for a more coordinated and effective response at the time of disaster. It promotes locally-led disaster preparedness, response, and recovery actions through improved coordination mechanisms, strengthened humanitarian leadership, training, and capacity development, systems transformation, innovation, South-South learning and knowledge exchange, and regional cooperation.

The APP’s goal is ‘‘Safer and well-prepared communities through locally-led disaster risk management (DRM) actions, so that disaster impacts on at-risk communities of Asia will be reduced’’.

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Introduction

Pakistan is a fit case study being a multi-hazards prone country with still exhibiting somewhat resilience due to its humanitarian and disaster risk architecture which also includes local philanthropy though partly compromised due to massive destruction and erosion during 2022 floods. The country ranked 18 out of 191 countries by the Inform Risk Index[1] and it has faced all kinds of hazards and disasters; among them floods have been frequent and devastating. The 2022 flood that destroyed parts of Pakistan, especially Southern part (Sindh and Balochistan), is among the latest disasters. Natural hazards are ever-changing and unpredictable events that pose challenges and threats to global socio-economic progress (Muhammad Awais Hussain, 2023). The global greenhouse gas (GHG) emissions in 2022 reached 53.8 Gt CO2eq (without LULUCF). The year 2022 recorded and experienced an increase of 1.4% or 730 Mt CO2eq compared to the levels in 2021. The global GHG emissions in 2022 rose by 6.2% compared to the levels in 2020, and by 2.3% compared to the levels in 2019 (EDGAR, 2023). The rise in GHG emission impacts the weather patterns which result ultimately in disasters and climatic hazards.

Pakistan contributes only 0.9% to GHG emissions. However, it is one of the most vulnerable countries to the impacts of climate change including drastic changes in rainfall patterns, intense flooding, melting glaciers, and an increase in the frequency and intensity of climate-induced natural disasters (Pakistan, 2021).

Year	GHG emissions Mt CO2eq/yr	GHG emissions per capita t CO2eq/cap/yr	GHG emissions per unit of GDP PPP t CO2eq/kUSD/yr	Population
2022	546.099	2.530	0.425	215.824M
2015	455.753	2.407	0.475	189.381M
2005	351.129	2.281	0.525	153.910M
1990	215.033	1.997	0.609	107.679M
Source: **(Crippa, 2023)** *(Emissions Database for Global Atmospheric Research (EDGAR) 2023)*				

The country remains a climate hotspot, heightening vulnerability. Urgent investment is needed for long-term recovery efforts, focusing on constructing the climate-resilient structures and systems to address equity gaps and to reduce vulnerability to future climate shocks and disasters. The humanitarian responses to these disasters are shaped by their proximity and resilience to the hazard. With the advent of climatic changes, the likelihood of encountering multiple natural hazards is projected to rise in various regions of Pakistan (Muhammad Awais Hussain, 2023). Pakistan through its nationally determined contribution (NDCs) 2021 has expressed its cumulative ambitious conditional target of an overall 50% reduction of its projected emissions by 2030, 15% reduction from the country's resources and a 35% reduction through the provision of international finance as grant. To achieve the targets as per the NDCs, Pakistan plans to shift its 60% energy consumption to renewable energy sources, shift 30% vehicles on electric energy and expand nature-based solutions by 2030 (Pakistan, 2021). But in the post 2022 floods devastation and other

1 http://www.inform-index.org/Countries/Country-Profile-Map

socio-economic indicators and energy needs through coal made difficult for Pakistan to keep pace with its NDCs and a revision of NDCs would be a good option to adjust to the current situation.

Climate change and climate-induced disasters pose a threat to the vulnerable segments of the Pakistani society, though each catastrophe gives a lesson for the times ahead. The frequency and intensity of floods have seen a significant rise and the most catastrophic flooding events in recent times: the 2010 super floods and the 2022 monsoon floods, have caused widespread devastation affecting millions of people (Hassam Bin Waseem, 2023).

The 2022 floods caused by heavy monsoon rains followed by glacial melt and urban flash floods during June and August 2022 inundated one third of the country impacting 33 million people, 20.6 million of which needed lifesaving assistance the most, half of them were children. As many as around 7.9 million were displaced with 664000 people opted to go to relief camps and other sites; two-thirds of flood-hit people have returned home, while 1.3 million remain temporarily displaced in Sindh, Balochistan, and Khyber Pakhtunkhwa (KP) (UNOCHA, 2023)[2].

A total of 84 districts were declared as 'calamity-hit'; they largely situate in the southern and central regions of the country. Sindh suffered 70 per cent of the country's total losses and damages. Punjab, Balochistan, and KP provinces were affected to a lesser but significant degree. The National Disaster Management Authority (NDMA) estimates that the floods damaged or destroyed more than 2.3 million homes and wiped out over 1.7 million hectares (4.4 million acres) of crops, while over 800,000 livestock perished, plunging more than 8 million people into poverty. Over 30,000 schools and 2,000 health facilities were damaged and needed to be repaired or entirely rebuilt. The risk populations remained at risk of diseases breakout amid lack of access to essential services, such as safe latrines, clean drinking water, and health facilities.

The lesson learned from the 2022 floods speak of increasing threat of climate change, due to which floods in Pakistan have grown more frequent, resulting in some communities facing repeated cycles of displacement amid climate-induced disasters. The climatic hazards have badly impacted the lives and livelihoods of millions of people, bearing a significant human and socio-economic cost and growing vulnerability and exposure to protection risks, especially for groups such as women, children, the elderly, and persons with disabilities.

This paper intends to develop a comprehensive case study/lesson learned document to ascertain the gaps in preparedness and response operations and to identify critical issues to be addressed to make improvements or modifications to enhance the locally-led actions.

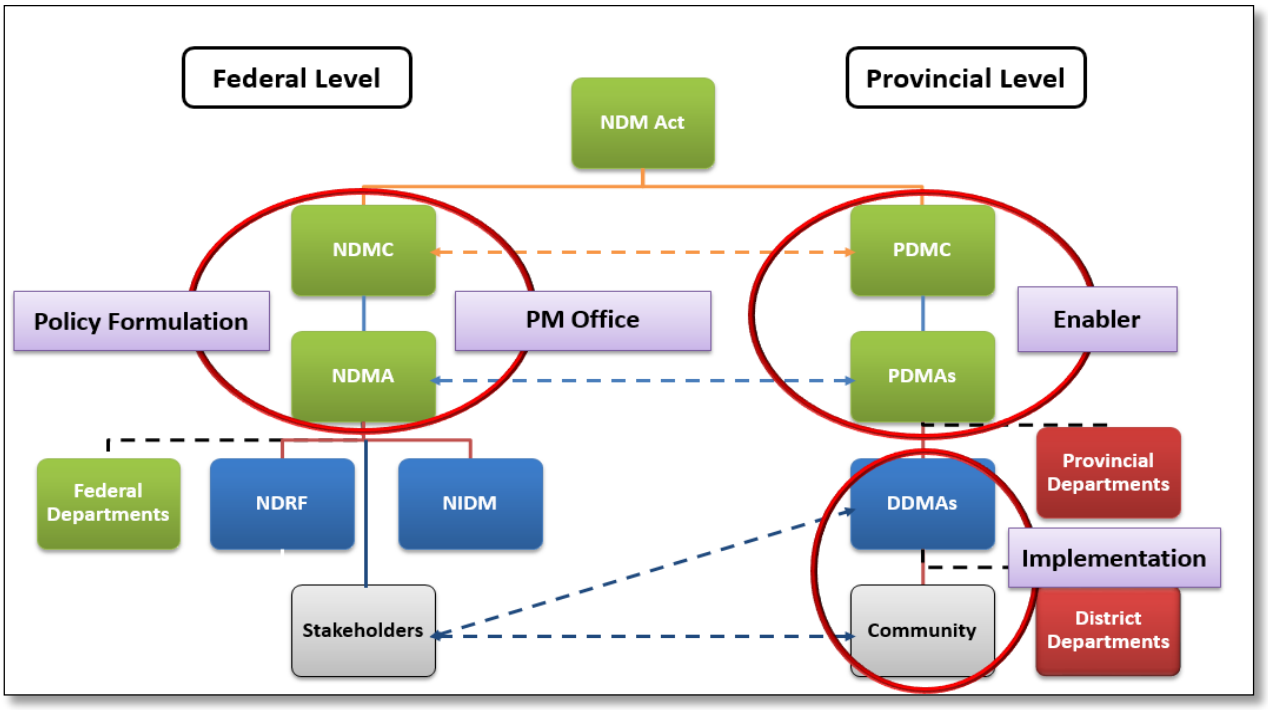
Disaster Management Architecture in Pakistan- Support Systems and Mechanisms

NDMA is the lead agency at the Federal level to deal with the whole spectrum of disaster management activities. It is the executive arm of the National Disaster Management Commission

2 UNOCHA 2023: *Revised Pakistan 2022 Floods Response Plan Final Report (Issued 15 Dec 2023, published on 18 Dec 2023),* *https://reliefweb.int/report/pakistan/revised-pakistan-2022-floods-response-plan-final-report-issued-15-dec-2023*

(NDMC) which has been established under the Chairmanship of the Prime Minister as the apex policy-making body in the field of disaster management. In a disaster, all stakeholders including Government Ministries/Departments/Organizations, Armed Forces, international non-government organizations (INGOs), non-government organizations (NGOs), and united nation (UN) Agencies work through and form part of the NDMA to conduct one window operations. NDMA manages the Disaster Management Cycle (DMC), including Preparedness, Mitigation, Risk Reduction, Relief, and Rehabilitation (NDMA, 2023).

All these disaster risk management (DRM) bodies operate in close coordination with the National Meteorological and Hydrological Service (NMHS) i.e., the Pakistan Meteorological Department (PMD) which provides a variety of forecast products to DRM, other governmental organizations, and the public. These products include seasonal outlooks and medium and short-range forecasts regarding the hydro-meteorological situation of the country, and they are issued regularly to provide information regarding the occurrence and severity of the hydrometeorological disasters. These forecasts and specialized bulletins provide information regarding imminent disaster risk, and they strengthen DRM to manage disaster risks.



(Raoof et al., 2021)

In January 1977, the Federal Flood Commission (FFC) was established for integrated flood management at the national level. In 1987, the Dam Safety Council (DSC) was established to carry out inspections of existing Dams and to review Plans for new dams. The FFC consists of the members of the National Highway Authority (NHA), Railways, Planning Commission, Water and Power Development Authority (WAPDA), Pakistan Commissioner for Indus Waters (PCIW), Indus River System Authority (IRSA), PMD, and Irrigation Departments of all the four provinces. The Commission is headed by the Chief Engineering Adviser, Ministry of Water and Power (FFC, 2023).

The FFC is mainly responsible for preparation of National Flood Protection Plans (NFPP) and their implementation through concerned Provincial and Federal Line Agencies in the country. In 2019, the FFC prepared the Floodplain Mapping and Zoning document to update Floodplain Mapping and Zoning all along the Indus River and its major tributaries viz. Jhelum, Chenab, Ravi, and Sutlej, and develop new floodplain maps for Kabul and Swat Rivers. The FFC mapping prohibits the permanent settlements in high and medium flood risk areas along the Indus and its major tributaries. The FFC has also conducted studies on the environmental concerns of all four provinces and recently published the fourth NFPP-IV.[3] The NFPP IV implements integrated watershed management through structural and non-structural measures such as flood forecasting and early warning, and flood risk zoning, etc. The investment plan of the NFPP-IV envisions two phases of investment worth PKR. 332.246 billion (US$1.17B) for a 10-year period until 2025.

The National Disaster Risk Management Fund (NDRMF) was created to support the implementation of the existing policies and strategies of the government of Pakistan to address disasters, including (i) the Disaster Risk Reduction (DRR) Policy (2013); (ii) the Climate Change Policy (2013) and the latest Climate Change Policy (2021); (iii) Vision 2025; (iv) National Disaster Management Plan 2013-2022 (NDMP); (v) the draft NFPP IV (2016-2025); and (vi) Post-2015 Sendai Framework for Disaster Risk Reduction (SFDRR), 2015-2030 (NDRMF, 2022).

Early Warning System (EWS)

With the installation of weather monitoring equipment, EWS, and the establishment of a National Drought Monitoring Center, EWSs have been improved. However, the system needs to be strengthened at the communities' level and requires a lot more to be done though at some level the early warning system has been put in place as functional.

To enhance community resilience and preparedness, early warning and radar systems under the Glacial Lake Outburst Flood (GLOF) Project are being installed in over 200 valleys across Gilgit-Baltistan (Dawn, 2023). The Ministry of Climate Change, in collaboration with the United Nations Development Program (UNDP), has initiated the GLOF-I project in northern Pakistan. The project played a pivotal role in aiding vulnerable communities by equipping them with the necessary tools to prepare for and mitigate GLOF risks. This involved the implementation of EWSs, the enhancement of critical infrastructure, and the promotion of community-based disaster risk management. The success of GLOF-I has paved the way for scaling up of the efforts in the GLOF-II project. GLOF-II seeks to further empower communities by enabling them to identify and manage risks associated with GLOFs and the broader impacts of climate change. Additionally, the project aims to bolster public services, thereby reducing the risk of disasters related to GLOF, while simultaneously improving community preparedness and disaster response capabilities. This comprehensive approach underscores the commitment to sustainable risk reduction in the face of GLOFs in northern Pakistan (UNDP, 2023).

Moreover, the NDMA, the Pakistan Telecommunication Authority (PTA), and the telecommunications industry have worked together to establish an efficient early warning system for local communities. The NDMP calls for ensuring timely and cost-effective dissemination of

3 https://climate-laws.org/document/national-flood-protection-iv_b897#

early warning messages through a comprehensive Multi-Hazard Early Warning System (MHEWS) Plan. The MHEWS Plan with a budget of approximately US$188 million involves upgrading existing radar stations, establishing connections between national and regional disaster management authorities, and implementing other related measures to strengthen EWSs (NDMA, 2023).

Pakistan Broadcasting Corporation (Pakistan Radio) and Pakistan Television have been effectively used as part of the information campaign. The PTA had already instructed all the mobile phone operating companies to provide early warning messages to the people as SMS-based Alert System. On this voluntary service, the operators do not seem fully functional that is why a big majority of the responders who were interviewed from the flood affected communities in Sindh and Balochistan for this case study complained that they had received either improper or no early warning messages which could had led them to evacuate timely to protect from the floods. Despite the efforts made on establishing early warning systems, various challenges hinder the scale and effectiveness of interventions as more needs to be done to building a robust early warning system, easily and timely accessible to the communities with a power to communicate to them appropriately with clear early warning messages directed towards safe evacuation, information on water flows, and weather conditions so that the communities can prepare themselves to survive from disasters. These challenges include an increase in the frequency of disasters, insufficient attention to local-level disaster risk reduction, limited financial resources, and constraints in institutional capacity.

Risk Awareness Initiatives as Early Warning Messages

Pakistan faces vulnerability to various hydro-meteorological disasters. PMD serves as the NMHS and offers forecasts to key stakeholders. Annually, monsoon seminars are organized to update the NDMA, Provincial Disaster Management Authorities (PDMAs), and District Disaster Management Authorities (DDMAs) on the susceptibility of different regions in the country to intense rainfall during the monsoon season, leading to subsequent flooding. These seminars serve as a crucial platform to disseminate essential information, enhance preparedness, and coordinate efforts among relevant agencies to address and mitigate the potential impact of monsoon-related disasters (PMD, 2023).

The National Agro-Meteorological Center (NAMC) under the PMD plays a crucial role in keeping the agriculture sector informed about meteorological conditions that have the potential to impact agricultural yield. The center regularly issues meteorological bulletins specifically tailored for farmers. These bulletins provide timely information on various risks, including heat waves, agricultural droughts, the potential for heavy rainfall, floods, hailstorms, frosts, and pest threats like Locust attacks.

Furthermore, these bulletins generally outline precautionary measures that farmers can undertake to mitigate the risks associated with these environmental conditions. By offering accurate and timely information, the NAMC aims to enhance resilience of the agriculture community, enabling them to make informed decisions and implement preventive measures to safeguard their crops against adverse weather and pest-related challenges. This proactive approach contributes to reducing the vulnerability of the agriculture sector to meteorological uncertainties (NAC, 2023).

Flood Forecasting Division (FFD), Lahore, is the specialized unit of the PMD and plays a pivotal role in flood forecasting and issuance of warnings to concerned quarters. In this way, PMD is identifying the underlying causes of disaster risk and reducing vulnerability by timely providing forecasts and warnings to the vulnerable communities while strengthening their capacities for risk reduction (FFD, 2023).

The United Nations Children's Fund (UNICEF) is focusing on capacity building of children and communities in Pakistan to deal with natural as well as human-induced risks through awareness sessions. UNICEF supports child-centered disaster risk reduction to prevent or mitigate humanitarian emergencies by reducing the impact of natural hazards and human-induced risks (UNICEF, 2023).

The member INGOs of Pakistan Humanitarian Forum (PHF) and the member NGOs of National Humanitarian Network (NHN) have been undertaking various community led programs on Community-Based Disaster Risk Management (CBDRM), early warning messaging, and information dissemination so that at-risk communities are made aware of the risks and hazards before they hit them. Thousands of community-based organizations in one or the other way are connected either to PHF or NHN members and are benefiting from their programs. Concern Worldwide, an INGO, has been running a CBDRM program in Pakistan since 2011. The program aims to build community resilience to natural disasters by training Emergency Response Teams (ERTs) that serve villages and regional Union Councils (UNDRR, 2023).

The Aga Khan Agency for Habitat (AKAH) has established 172 structured Community Emergency Response Teams (CERTs) across Pakistan and has trained over 36,000 community volunteers (over 50 percent women) as first responders. AKAH has also assessed 777 settlements, which are exposed to hazards, in the country, mainly in mountainous areas. These assessments are updated with community participation every three years. Community-based systems have been developed to continuously monitor major hazards, including 25 glaciers and 20 lakes in Gilgit Baltistan and Chitral (GBC).

The role of these CERTs is critical, particularly in communities located in risk-prone mountainous and isolated locations. Community volunteers are trained by AKAH to prepare communities as first responders in disaster situations. Over the years, AKAH has established 172 structured CERTs across Pakistan and has trained over 36,000 community volunteers (over 50 percent women) as first responders.

Source: (AKDN, 2023)

Role of Information and Communications Technology (ICT)

Pakistan has utilized technology to strengthen its disaster preparedness and response capabilities, by creating mobile applications for emergencies under the "Smart Pakistan" initiative launched in 2019. Despite these advancements, there is a recognized need for further efforts to make these initiatives more inclusive and sustainable, with a specific focus on marginalized groups.

To address this, it is necessary to undertake additional measures to actively involve marginalized communities in DRR endeavors. This includes ensuring their participation in the development and implementation of disaster management plans and policies, with a commitment to incorporating their unique needs and perspectives.

Following NDMA, the PDMA (KP), has also established a Gender and Child Cell to promoting empowerment of women, protection of children and persons living with disabilities, youth, and other marginalized groups. The goal is to enable these groups to take on public leadership roles and advocate for gender-equitable and universally accessible approaches in response, recovery, rehabilitation, and reconstruction efforts. By actively involving and empowering marginalized communities, Pakistan seeks to ensure a more comprehensive and resilient disaster management framework that addresses the diverse needs of all its citizens (PDMA-KP 2023).

PMD in collaboration with the Japan International Cooperation Agency (JICA) has successfully executed a project aimed at establishing a specialized medium-range weather forecasting center. This initiative is designed to fortify the weather forecasting system in the country.

In 2022, PHF member organizations implemented 400 projects throughout Pakistan including Azad Jammu and Kashmir (AJ&K) and Gilgit Baltistan (GB). These projects included 296 dedicated to humanitarian assistance, particularly in response to 2022 floods, and 104 focused on development interventions. These initiatives, worth over $330 million, benefited more than 21.2 million people nationwide. PHF emphasizes the importance of long-term recovery and reconstruction in flood-affected areas, extending its commitment beyond immediate response efforts (PHF, 2022).

The project encompassed several key components, including the upgrading of the radar system in Islamabad, the installation of a wind profiler for upper-air observation, the provision of a comprehensive weather forecasting and analysis system, and implementation of technical training programs covering the operation and maintenance of weather radar, utilization of meteorological products, and related areas. Additionally, meteorological data communication systems have been installed in the Severe Weather Monitoring and Forecasting Center (SMRFC) and five regional meteorological centers of the PMD, facilitating the seamless exchange of weather information.

Anticipated outcomes of this project include improvements in weather surveillance capacity, enhancement of the weather forecasting and warning system, and the provision of more precise weather observations. These enhancements will enable meteorologists to track and monitor weather patterns with greater accuracy. Notably, the upgraded radar system stands out for its ability to detect severe weather conditions such as thunderstorms and tornadoes, enabling early warnings to be disseminated to the public. This collaborative effort between the PMD and JICA signifies a significant step forward in fortifying Pakistan's capabilities in meteorological forecasting and monitoring (JICA, 2022).

‘Pakistan Disaster Info’ is a nationally owned, open-source data platform with the primary objective of facilitating mandated agencies to share their geospatial datasets and maps related to hazards and exposure. In addition to serving as a repository for existing datasets, this platform is designed to host newly developed datasets, hazard, and risk information. The initiative is supported by the Global Facility for Disaster Reduction and Recovery (GFDRR), the World Bank, and the Department for International Development (DFID/FCDO) as part of the "Development of a National Platform for Risk Assessment and Catastrophe Risk Financing Program in Pakistan."

The overarching goal of this program is to implement a risk identification and financing framework that encourages data-driven analysis. The intention is to foster a reduction in disaster risk over the long term. To achieve this, the program will undergo a series of interventions, including the testing of evidence-based risk analysis in public policymaking. These interventions will involve providing relevant risk information, training users, and enhancing decision-making systems within the field of disaster risk management.

By leveraging the support of international organizations like GFDRR, the World Bank, and FCDO, the initiative aims to enhance Pakistan's resilience to disasters by establishing a comprehensive and accessible platform for risk assessment and management. The emphasis on data-driven analysis and evidence-based policymaking is expected to contribute significantly to reducing the overall impact of disasters in the country over time (ESCAP, 2023).

Floods in the Context of Pakistan

In the recent past, the frequency and intensity of natural disasters has been increased in Pakistan. These disasters have caused severe losses to the national economy in various sectors. The natural disasters have undermined Pakistan’s efforts aimed at achieving fast growth, development, and progress.

The earthquake of 8th October 2005 highlighted Pakistan’s vulnerability to disaster risks. This vulnerability has been further underscored by the extensive damage caused by the floods in both 2010 and 2022. These disasters continue to foil the development efforts and challenge the poor people/government's capacities to respond.

Pakistan is characterized by a diverse landscape and fluctuating climatic patterns. While Pakistan is generally known for its hot and arid climate, there have been a significant variation in recent years. Many districts and urban areas situated along the banks of rivers face a substantial risk of facing different types of floods, including riverine, flash, and urban floods, especially in the provinces of Punjab and Sindh (FFC, 2020). Floods usually occur in the summer season (July - October) and the flooding in the Indus River and its tributaries represents the greatest hazard in Pakistan. The precipitation from July to October causes damage to the standing Kharif crops. However, in some cases, the inundated lands do not dry up in time ultimately affecting the sowing of Rabi crops (FFC, 2020).

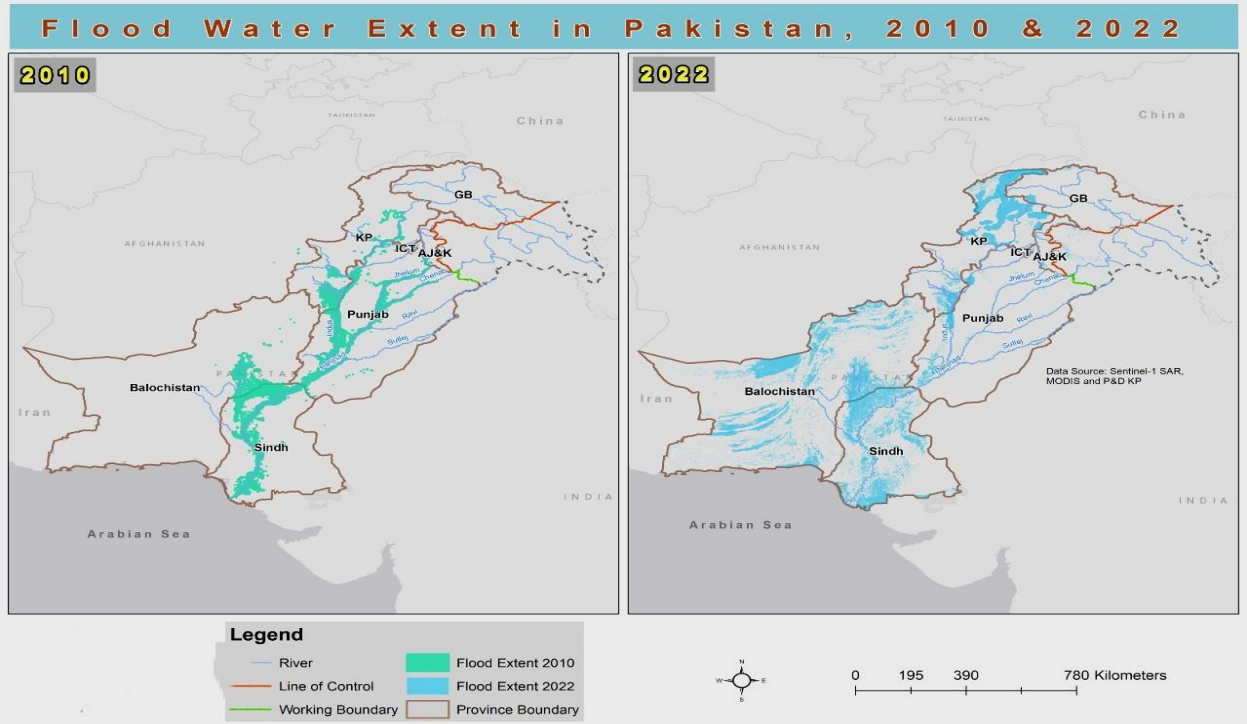
Since the 1950s, Pakistan has faced severe flooding every decade causing the deaths of hundreds of people, damaging infrastructure, disrupting livelihood sources, and displacement of millions of individuals (Muhammad Yaseen, 2023). The country faced a series of floods in 1950, 1973, 1976, 1988, 1992, 1997, 2010, 2011, 2012, 2015, and 2022 (NDMA, 2010).

Major Flood Events Witnessed in Pakistan

S. No	Year	Direct Losses (USS Million)	Lives Lost	Affected Villages	Flood Area (Sq.KM)
1	1950	488	2,190	10,000	17,920
2	1955	378	679	6,945	20,480
3	1956	318	160	11,609	74,406
4	1957	301	83	4,498	16,003
5	1959	234	88	3,902	10,424
6	1973	5134	474	9,719	41,472
7	1975	684	126	8,628	34,931
8	1976	3485	425	18,390	81,920
9	1977	338	848	2,185	4,657
10	1978	2227	393	9,199	30,597
11	1981	299	82	2,071	4,191
12	1983	135	39	643	1,882
13	1984	75	42	251	1,093
14	1988	858	508	100	6,144
15	1992	3010	1,008	13,208	38,758
16	1994	843	431	1,622	5,568
17	1995	376	591	6,852	16,686
18	2010	10,000	1,985	17,553	160,000
19	2011	3730	516	38,700	27,581
20	2012	2640	571	14,159	4,746
21	2013	2,000	333	8,297	4,483
22	2014	440	367	4,065	9,779
23	2015	170	238	4,634	2,877
24	2016	6	153	43	-
25	2017	-	172	-	-
26	2018	-	88	-	-
27	2019	-	235		
28	2020	-	409		
29	2021		198		
30	2022	15200	1730		38,040

Source: (FFC, 2021), (MoP, 2022)

The 2010 flood spanned six months, it affected 20 million people, destroyed 1.1 million houses, and damaged 436 healthcare facilities (Kirsch TD, 2012). The flood affected 45 out of 135 districts causing approximately $9.7 billion worth of damages (Thomas D. Kirsch, 2012).



Source: (Zaidi, 2023).

In 2022, Pakistan faced another severe flooding affecting 33 million people, took more than 1700 lives, and damaged more than 2.2 million homes. The flooding forced more than 5.4 million people, including 2.5 million children, to leave their homes (MoP, 2022). In 2023, (from June 25 to September 30), Pakistan experienced heavy monsoon rains and flash floods that resulted in 226 fatalities, 349 injuries, over 543,567 people evacuated or rescued, and 5,813 damaged houses (WFP, 2023).

Pakistan's Floods 2022

The 2022 floods are the manifestation of Pakistan's high vulnerability to climate change. Pakistan contributes only 0.9% to global GHG emissions but ranks among the top ten vulnerable countries to climate change (GoP, 2021). In 2022, Pakistan experienced one of the most severe floods in history, causing substantial loss and damage to the country's infrastructure, economy, and livelihoods.

Causes of Floods 2022

The question of what led to the devastating flood in Pakistan in 2022 is significant. Various factors have been identified that contributed to the August 2022 flood event. These include substantial rainfall, the contribution of glacial meltwater, and the development of an intense low-pressure system over the land area, a result of the summer heat waves experienced from May to June (Friederike E L Otto, 2023).

Role of La Nina in Floods 2022

Pakistan experiences its monsoon season typically between July and August, with an average monthly rainfall of about 255mm. In 2022, however, the monsoon rains reached unprecedented

levels, surpassing 190% of the usual rainfall for July and August. This excess precipitation led to saturated flood basins, river overflow, and an overwhelmed natural drainage system, resulting in widespread flooding. The substantial increase in rainfall is a direct factor in the flooding events witnessed in Pakistan. This surge in extreme weather occurrences is becoming more frequent and intense, attributed to the effects of climate change. The impact of climate change in Pakistan is evident in the accelerated melting of glaciers, which contributes to the occurrence of torrential rain, further exacerbating the risks and consequences of flooding in the region[i].

From March-May 2022, Pakistan recorded some of the highest temperatures in the country in the last 60 years. The heat waves from March to mid-June 2022 followed by the onset of the monsoon in parts of the country with flash flood warnings and torrential rains causing loss of life and damage to property.

In May 2022, climate change triggered a melting glacier and flash floods damaged a bridge and homes and businesses in GB. Pakistan receives precipitation during the summer monsoon season; however, it is not directly associated with the monsoonal troughs, which are generally confined to the Indian region. In 2022, Pakistan experienced peculiar and prolonged heatwaves in the dry in summer months from March to May, with temperatures exceeding 51°C in May in some parts of the country (International, 2022).

La Nina has indeed enhanced the precipitation over the Indus basin. A commonality between the 2010 and 2022 events is the occurrence of La Nina in the tropical central Pacific. The La Nina pattern was more intense in 2010 compared to 2022. However, unlike 2010, a negative Indian Ocean Dipole (IOD) exists in 2022. The concurrence of La Nina and negative IOD during 2022 indicates anomalous warmer sea surface conditions in the eastern Indian ocean (around Indonesia), providing additional moisture strengthening monsoon depressions (Chi-Cherng Hong, 2023).

August 2022's monthly rainfall alone exceeded the total normal monsoon seasonal rainfall by 37%. August 2022 precipitation remained above the average over Balochistan (+590%) & Sindh (+726%) with both ranked to have experienced the wettest ever August, while, excessively above average over GB (+233%) ranking 2nd wettest August during past 62 years (PMD, 2022).

August 2022 Area-Weighted Rainfall					
	Rank (of 62)	**Normal (mm)**	**Average (mm)**	**Departure (percent)**	**Ranking**
Pakistan	**62**	**56.2**	**192.7**	**243**	**1st highest (previous record 116.7 mm in 2020)**
Punjab	53	93.3	141.7	52	10th highest (record 282.6 mm in 1973)
Balochistan	62	22.4	154.9	590	1st highest (previous record 83.3 mm in 2020)
Sindh	62	53.6	442.8	726	1st highest (previous record 247.9 mm in 2020)
Khyber Pakhtunkhwa	59	103.6	163.9	58	4th highest (record 225.4 mm in 2010)

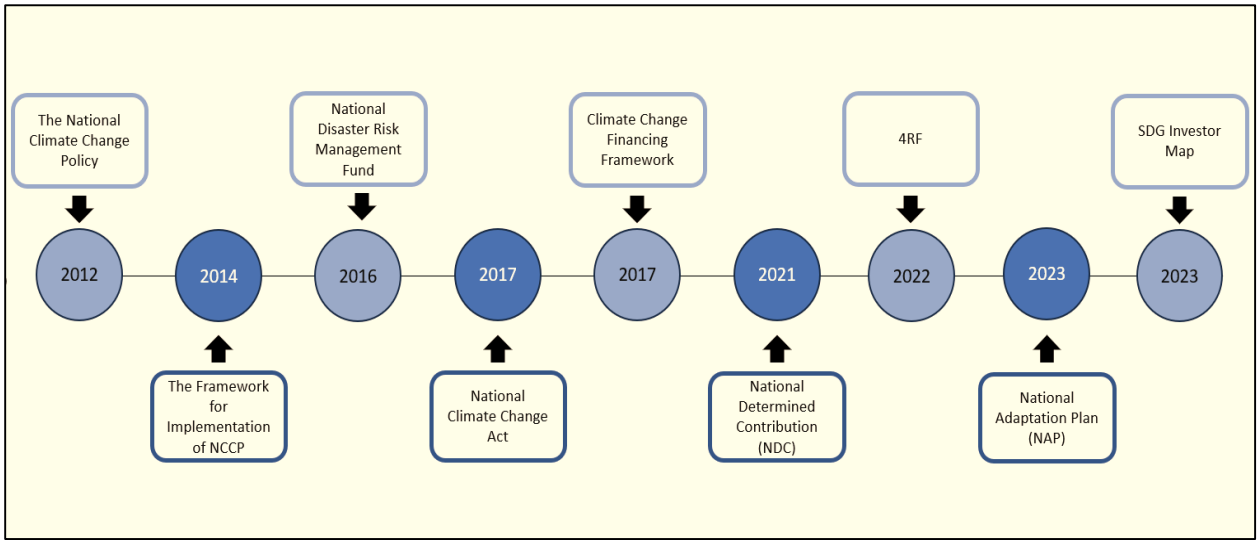
Azad Jammu & Kashmir	34	156.7	146.1	-3	29th highest (record 308.2 mm in 1997)
Gilgit-Baltistan	61	16.7	55.7	233	2nd highest (record 89.1 mm in 1997)

(PMD, 2022)- [Rank ranges from 1 (Lowest) To 62 (Highest)]

The Government of Pakistan often tries to absorb financial losses from disasters by various available sources, especially traditionally it relies on post-event donor funds to cover humanitarian response related expenses. However, this reactive ex-post-risk financing strategy has proven insufficient, resulting in a financial gap after disasters. To overcome this challenge, the government is recommended to develop a comprehensive country catastrophe risk financing strategy.

The global economic outlook has been significantly influenced by the geopolitical situation, challenging financial conditions, and elevated inflationary pressures. These factors have also posed substantial economic risks for Pakistan. The situation was further aggravated by devastating floods and political unrest. The estimated damage from the floods is Rs 3.2 trillion (US$14.9 billion), with a loss to the GDP at Rs 3.3 trillion (US$15.2 billion), and a recorded need for rehabilitation of damages at Rs 3.5 trillion (US$16.3 billion). Additionally, on the international front, the prolonged Russia-Ukraine conflict had adverse effects on global growth, and inflation remained unexpectedly high (MoF, 2023). This has impacted the funding streams for Pakistan and other countries in the developing world. The following policy landscape explains the policies relating to climate change and disaster risk management and also provides some linkages to funding instruments.

DRM and Climate Change Policy Landscape



Structural Issues

After the 18th Amendment, NDMA have a limited influence over PDMAs and DDMAs regarding implementation of rules, guidelines, policies, and plans. It is merely the will of these organizations to follow the rules, policies, and plans approved by NDMA to be followed or not.

NDMA works on DRR, however, it is not in its mandate to devise DRR strategies or policies for specific sectors such as agriculture. NDMA is established to facilitate and develop policies, guidelines, and directives for climate change, DRR, and response, but the enforcement of such policies, guidelines, and directives is the responsibility of PDMAs and other line departments. As per the National Disaster Management Act, NDMA is the lead policy formulation, monitoring, and implementation body. Here implementation doesn't mean that NDMA will implement projects at the community level because the constitution does not mandate NDMA to implement projects at the community level or provincial level. There is an urgent need to remove contradictions in public policy on DRR and DRM. But this can't be done unless legal lacunas are removed between the National Disaster Management Act 2010 and the Provincial and Local Government Acts. Since the disasters and climate change hit at very local levels, so localization in terms of climate and DRR action should be the priorities to protect the vulnerable and at-risk communities. The DRM/DRR functions need to be tackled by local authorities and local government representatives. One of the significant concerns revolves around the inadequacy of concrete financial commitments within the SFDRR, particularly for developing countries such as Pakistan that face climate-induced disasters. This framework fails to explicitly acknowledge climate change adaptation as a pivotal and overarching theme that should cut across DRR and management efforts.

> The absence of clear financial commitments and the lack of integration of climate change adaptation with DRR undermine the effectiveness of global initiatives in supporting countries like Pakistan, particularly those vulnerable to the impacts of climate-induced disasters (UNDRR, 2023).

The capacity of the Indus River System (IRS) to handle flood peaks has been significantly compromised due to unsustainable land use and water management practices. These practices, such as overexploitation of mountain ecosystems, illegal encroachments in riverbeds, alterations in natural river flows, and unplanned infrastructural development, have led to increased surface runoff and flash floods in the upstream mountain areas. Downstream, unregulated urban development and poorly designed physical infrastructure have obstructed the smooth flow of water in the IRS, preventing floodwaters from reaching the sea through its natural pathways.

Complex Flood Management System

The flood management system involves multiple institutions. NDMA/PDMAs are the coordinating agencies with roles in flood control, management, and response. The FFC is mandated for flood control and formulating flood protection strategies. FFD is responsible for forecasting floods and issuing forecasts; WAPDA, Pakistan Islands Development Authority (PIDA), and Punjab Police Wireless Telecommunication Wing support FFD in measuring water flows and levels whereas Pakistan Army, District Management, and officials are involved in flood control, management, and response. Duplicating roles and weak coordination mechanisms exist due to different reporting lines among these institutions.

Unsustainable Land Use Practices

Over exploitation of mountain ecosystems and illegal encroachments in riverbeds have increased surface runoff, contributing to devastating flash floods in western mountain areas. These unsustainable practices, when coupled with unregulated urban expansion, have disrupted the natural flow of water within the IRS. Additionally, the implementation of infrastructural projects, encompassing roads, bridges, canals, and culverts, has been executed without adequate planning. Consequently, these developments have further obstructed the smooth movement of water, intensifying the adverse effects of floods. Human-made modifications to the natural course and channelization of rivers and altering their flow patterns have upset the balance of the IRS. This disruption has diminished the system's ability to absorb and mitigate the impact of flood peaks, exacerbating the overall vulnerability to flooding events.

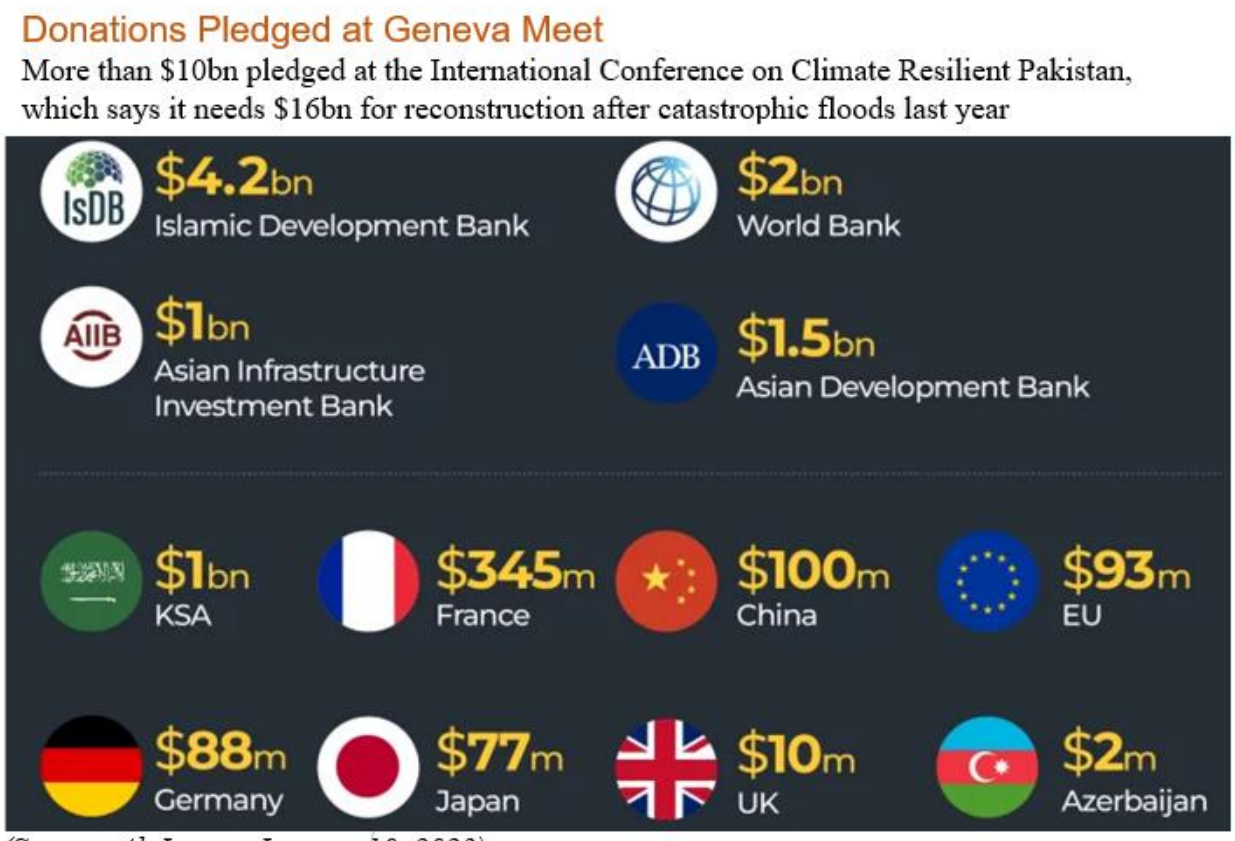
COMMUNITY VOICES URGING A NEED FOR LOCAL LEVEL DRR PLANS

The participants of a Focus Group Discussion with 15 women in Mirpur Khas narrated that they experienced four main disasters between 2000 to 2022, which were floods, locusts attack, earthquakes, and COVID-19. In the 2022 Floods, people lost their houses and livelihood resources. Their crops were destroyed, so people migrated to other localities leaving their villages to survive. They complained since there was no local level disaster risk reduction plan with knowing the community's needs before the disaster struck, they (community) could not do much to avoid losses and damages caused by the floods. Most of their livestock, including cows, goats, and buffaloes, perished, and the remaining animals became sick. Their living conditions deteriorated expressively as the entire village was underwater for a longer time than the previous such floods. They even had to leave their village and move to a road side which was built higher. The participants narrated that they faced a major setback in terms of livelihood as they lost their primary sources of income as most of the villagers were farmers and raring livestock.

An Underfunded Response Over-Reliant On Debt

In contrast to the 2010 flood emergency, where global humanitarian aid exceeded US$3 billion, the response to the floods 2022 crisis has seen much lower contributions, with donors providing only US$297 million in grant-based contributions for relief and early recovery activities in the early months of the disaster.

In January 2023, Pakistan and the United Nations invited the donors at a ‘Resilient Pakistan Conference’ in Geneva with two primary objectives. The first objective was to present the Resilient Recovery, Rehabilitation, and Reconstruction Framework (4RF) that outlined a multisectoral strategy aimed at facilitating rehabilitation and reconstruction efforts in a manner that is both climate-resilient and inclusive. The second objective was to secure international support and establish long-term partnerships: The conference aimed to garner international support for the implementation of the Resilient Recovery, Rehabilitation, and Reconstruction Framework. Additionally, it sought to foster long-term partnerships focused on enhancing Pakistan's climate resilience and adaptation capabilities. (UNDP, 2023).



(Source: Al-Jazera, January 10, 2023)

The donors at 'Resilient Pakistan Conference' in Geneva pledged around US$ 10 billion for Pakistan's floods recovery plan.[4] Out of this amount, only a few million dollars are grants while rest of the sums are a debt which means Pakistan's floods 2022 Recovery and Rehabilitation Plan is in fact underfunded in terms of grants and it is a debt-based recovery plan which will be a burden on a country which is already walking on a tight rope through IMF program. The following graph shows who has pledged what. The money has started coming in but the speed looks not matching to the required needs and time.

Notably, the predominant form of support in the current crisis is debt-based financing, indicating a shift in the approach to addressing the emergency. In the initial stages of the crisis, a significant form of assistance was the distribution of cash payments to vulnerable population hit by the floods through Pakistan's Benazir Income Support Programme (BISP), which serves as the country's social protection mechanism (UKHIB, 2022). But the recovery and rehabilitation phase is marked with debt based funding mechanism which has its own complexities.

Impacts of Floods 2022

The torrential rains and flooding in August 2022 impacted more than 33 million people and caused more than $40 billion in economic damages. The flooding left 1,700 people dead, 2 million homes destroyed, and killed over 900,000 livestock (MoP, 2022). The floods submerged one-third

4 https://www.aljazeera.com/news/2023/1/9/flood-hit-pakistan-hosts-climate-resilience-meet-with-un-for-aid

of the country under water and displaced around 8 million people. Sindh was the worst affected province with close to 70% of total damages and losses, followed by Balochistan, KP, and Punjab (World Bank, 2022).

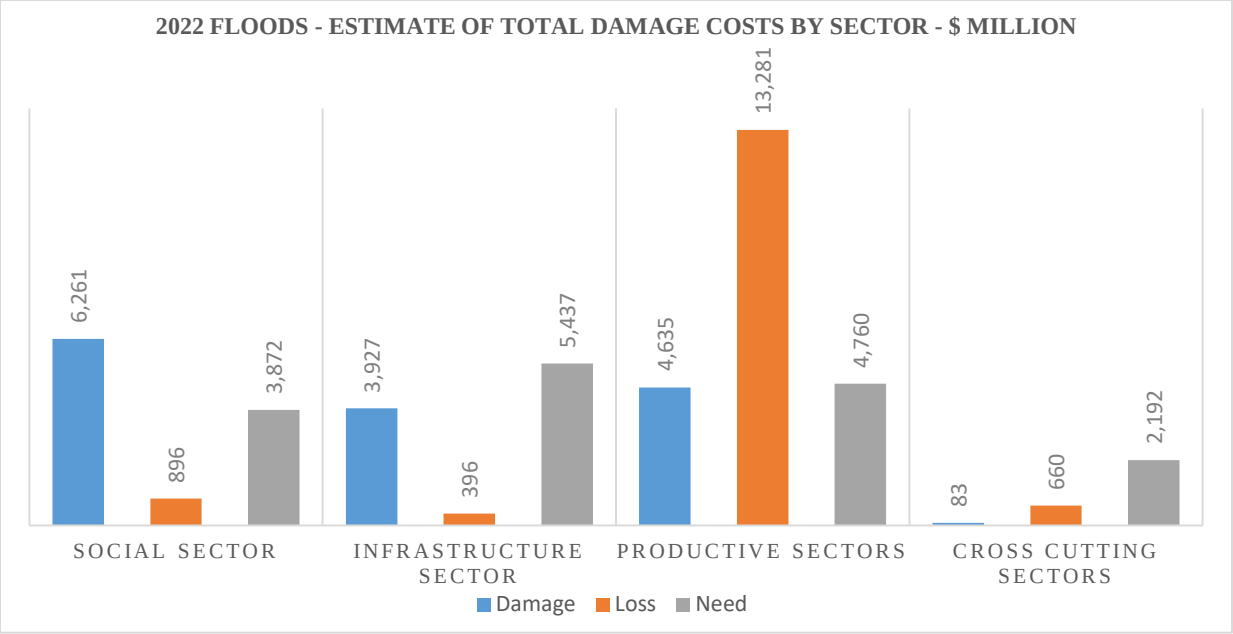
The major issues emerged due to floods include mass displacement, food insecurity, loss of livelihoods, and an increased risk of waterborne diseases, drowning, and malnutrition. As of early January 2023, 5 million people either were living in or exposed to floodwaters (WRI, 2023). The Centre of Philanthropy reports that as of March 2023, approximately 1.8 million people were still living near stagnant and contaminated floodwater (CDP, 2023). The floods inundated about 94 districts, in Balochistan, Sindh, and KP, including 19 out of the 25 poorest districts in the country (MoP, 2022). The flood has damaged more than 2 million houses, 23,900 schools, and 13,000 km of road. The number of displaced people is estimated to be 7.9 million including 598,000 people living in relief camps (OCHA, 2022).

Cumulative Losses in Floods - 2022

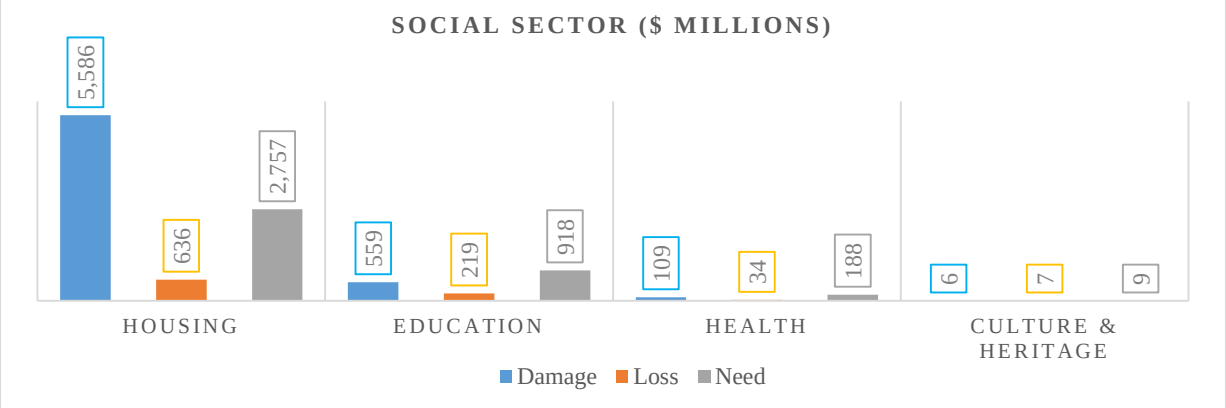
Province/Region	Road	Bridges	Houses	livestock	Affected Population
Sindh	8,389	165	1,885,029	436,435	14,563,770
Balochistan	2,222	58	241,659	500,000	9,182,616
Punjab	877	15	67,981	205,106	4,844,253
Khyber Pakhtunkhwa	1,575	107	91,464	21,328	4,350,490
Gilgit Baltistan	33	61	1,793	609	51,500
AJ&K	19	33	555	792	53,700
Total	**13,115**	**439**	**2,288,481**	**1,164,270**	**33,046,329**

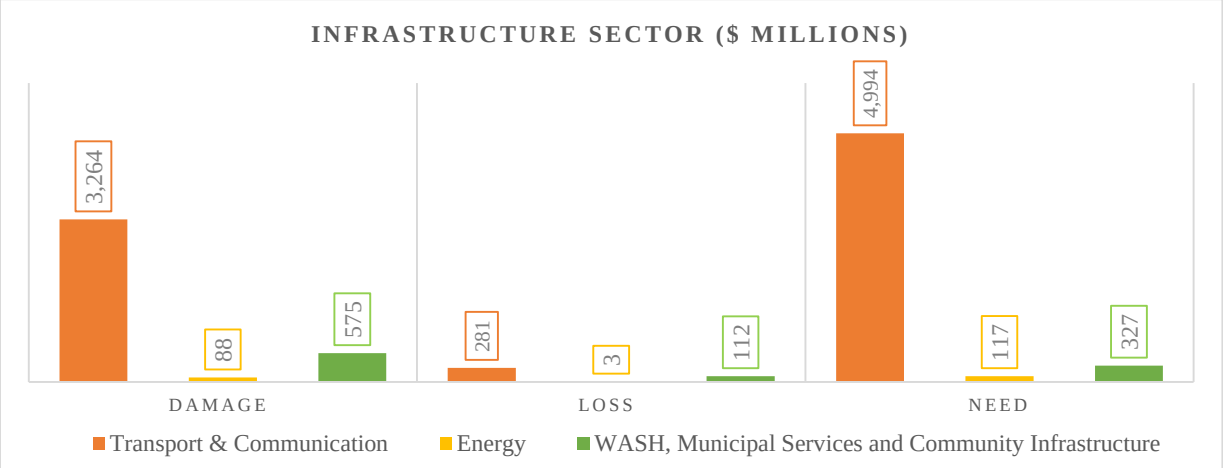
(SBP, 2023)

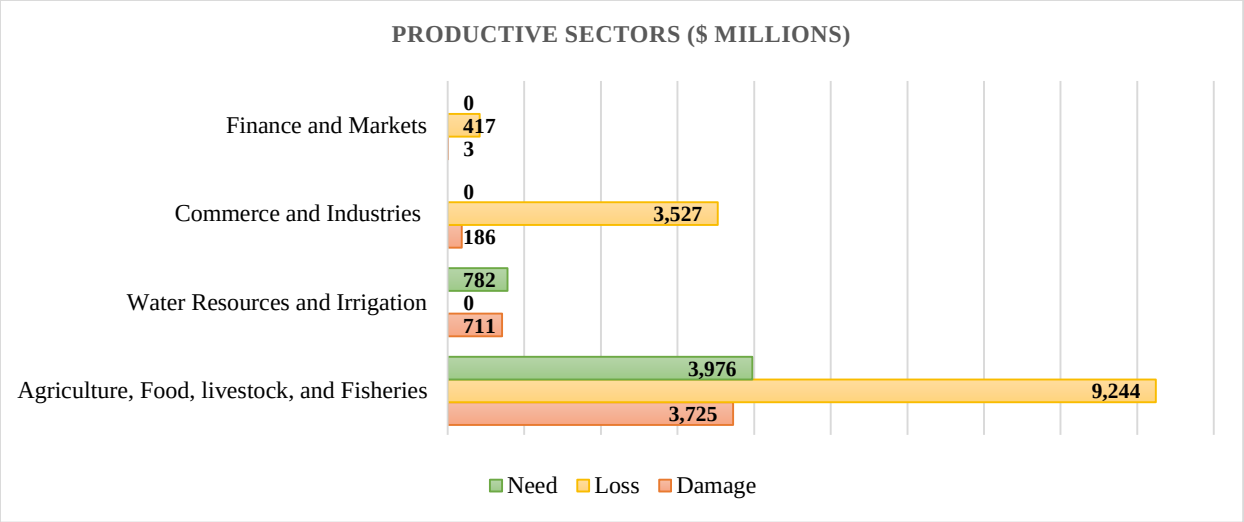
The flood damages are estimated to be at Rs 3.2 trillion (US$14.9 billion), losses to GDP at Rs 3.3 trillion (US$15.2 billion), and recorded need for rehabilitation of damages at Rs 3.5 trillion (US$16.3 billion) which is projected as much as 1.6 times the budgeted national development expenditure for the fiscal year 2023. It is estimated that the total damage is equivalent to 4.8% of FY22 gross GDP. Housing, Agriculture and Livestock, Transport and Communications sectors suffered the most significant damage, at US$ 5.6 billion, US$ 3.7 billion, and US$ 3.3 billion, respectively. (MoP, 2022).

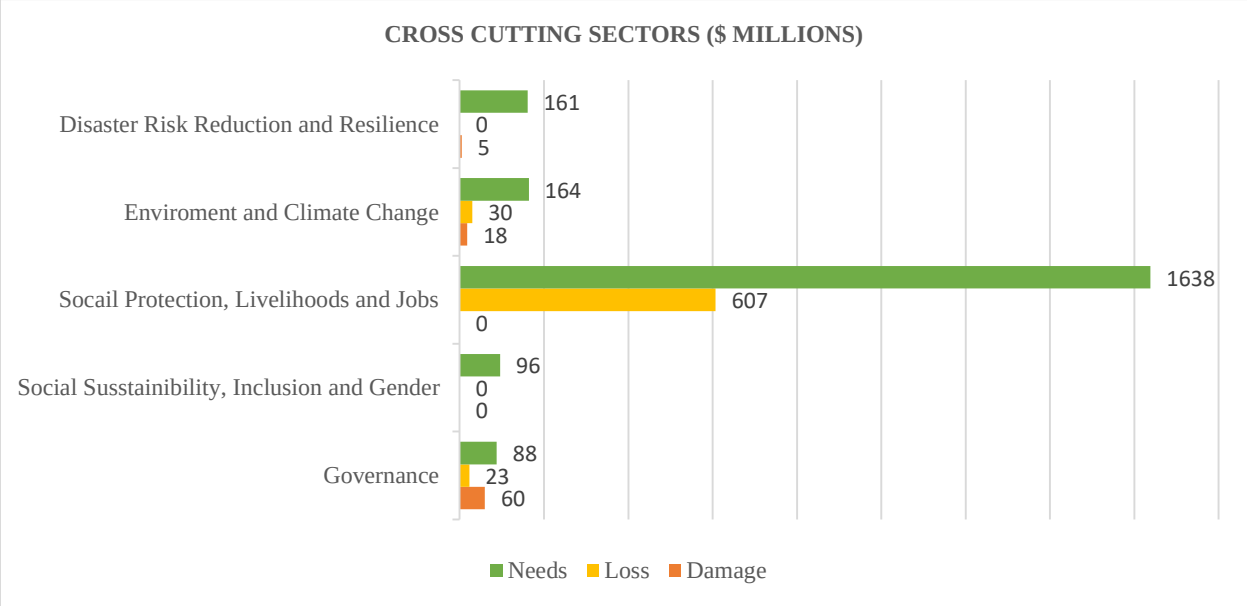


Floods 2022 - Estimate of Total Damage Costs by Sector









Source: (MoP, 2022)

Pakistan's economy faced a considerable setback due to a significant supply shock caused by the devastating floods in August 2022, coupled with extensive disruptions in the external sector. The impact of this shock on a crucial economic sector has had a ripple effect on other sectors due to their interconnected relationships. Both supply-side and demand-side shocks, transmitted through backward and forward linkages, have varying influences across different sectors. The interactions of these shocks are anticipated to play a crucial role in shaping overall economic growth (MoF, 2023).

It has been estimated that the floods pushed 8.4 million–9.1 million people into poverty. Multidimensional poverty is estimated to have increased by 5.9% points, pushing an additional 1.9 million households into nonmonetary poverty (MoP, 2022). The World Bank's Poverty & Equity Brief of April 2023 shows that poverty is expected to reach 37.2 % ($3.65/day 2017ppp) which was 39.8% in 2018 (World Bank, 2023).

The World Health Organization (WHO) reported that as of November 8, 2022, around 8 million flood-affected people needed health assistance. More than 1,000 confirmed cholera cases and 64,767 dengue fever cases, with 147 deaths, were reported. Furthermore, more than 5.1 million women were reported to be in the reproductive age (15-49 years), including an estimated 410,846 women who were pregnant needing pre- and post-natal healthcare (OCHA, 2022).

Comparison of Floods 2010 and 2022

The monsoon of 2010 brought about the most severe flooding in the country in the past 80 years. The unparalleled floods, starting in July 2010, were a result of heavy monsoon rains affecting KP, Sindh, lower Punjab, and Balochistan regions (Hashim Nisar Hashmi, 2012). According to the floods 2010 damage and need assessment (DNA) report,[5] the floods 2010 caused a cumulative financial loss of $10.56 billion, about 2000 deaths and 17553 villages destroyed impacting 160,000 sq.km area of the country.[5] Over 2 million hectares of standing crops were either lost or damaged, and the flood resulted in the tragic death of over 1.2 million head of livestock, excluding poultry. Particularly in Punjab and Sindh, between 60 and 88 percent of farming households reported losses exceeding 50 percent for major crops like rice, vegetables, cotton, sugar, and fodder (MoF, 2011).

Comparison of Pakistan Floods 2010 and 2022 Damages		
Indicator(s)	**Floods 2010**	**Floods 2022**
Population Affected	22 million	33 million
Districts Affected	78 Districts	116 Districts
Houses Damaged	1.6 million	1 million (counting continues)
Crop Area Affected	1.97 million Acers	2 million Acers
Damages to Road Infrastructure	5,646 KM	3,457 KM (counting continues)
Major Bridges Damaged	40 Bridges	157 Bridges
Inflation Rate	15.7 %	24.9%
GDP Per Capita Income	987$	1,538$

(A4EP, 2022)

Role of La Nina

The La Nina pattern was more intense in 2010 compared to 2022. However, unlike 2010, a negative Indian Ocean Dipole (IOD) exists in 2022 which provided additional moisture in the atmosphere resulting in more severe monsoon rains.

Disaster Management Structures

The floods of 2010 were the first mega disaster in the country. The newly established NDMA, serving as the primary coordinating agency, had limited capacity. The PDMAs and DDMAs were in their infancy and could not handle large disasters. The flood management system, involved NDMA/PDMAs, the FFC, the FFD under the PMD, WAPDA, PIDA, Punjab Police Wireless Telecommunication Wing, Pakistan Army, and district officials, was complex. However, weak coordination mechanisms and duplicated roles due to different reporting lines were evident.

5 Government of Pakistan (2010) Pakistan Floods 2010 Preliminary Damage and Needs Assessment http://www.ndma.gov.pk/

In comparison NDMA and PDMAs were well established in 2022. However the complications of flood management system still persisted in 2022 which continued to create confusion and lack of coordination among different state actors. On top of that, an additional coordination body namely National Flood Response Coordination Centre (NFRCC) was established to oversee the flood response coordination. This further added to the complexity of the already intricate disaster management structure.

The enactment of the 18th constitutional amendment and the latest National Finance Commission (NFC) Award had introduced significant challenges in the relationship between the central government and the provinces. The devolution of disaster management responsibilities to the provinces created difficulties in establishing a centrally coordinated and cohesive national response. This shift contributed to tensions between the central government and the provinces. Additionally, confusion emerged regarding fiscal arrangements for the distribution of resources between provinces for relief efforts, impacting decision-making on resource allocation.

Floodplain Management

The 2010 floods exposed the dangers of encroachment on floodplains. Following the disaster, a National Flood Protection Plan was adopted, aiming to improve riverine management, embankments, and early warning systems. While progress has been made, gaps remain, as evidenced by continued floodplain development and some infrastructure failures in 2022.

International Cooperation

Both events necessitated significant international assistance. Continued collaboration with international partners remains crucial for strengthening Pakistan's disaster preparedness and response capabilities, particularly in the face of climate change. Pakistan received substantial assistance in terms of relief items, from other countries during both disasters. The international community pledged overall more funding for the 2022 floods compared to 2010. This could be due to several factors, including the larger scale of the 2022 disaster, changing global priorities, and potentially improved fundraising mechanisms.

Pakistan's Response to Floods 2022

The humanitarian response to the floods in Pakistan is spearheaded by the government, with assistance from UN agencies and humanitarian partners. As of October 25, 2022, the government has provided cash assistance of $113 - PKR 25,000 per household to over 2.7 million flood-affected households through the BISP. This initiative focuses on offering cash transfers to women and their families in the poorest households across the country (Balochistan PDMA, 2022).

In addition to financial aid, by August 25, the NDMA and the PDMA of all the four provinces, Gilgit Baltistan and AJK extended support to those in need through in-kind assistance. This includes 143,685 food packs, 167,822 tents, 84,580 tarpaulins, 211,236 mosquito nets for shelter, and Water, Sanitation and Hygiene (WASH) supplies, consisting of 10,045 Hygiene Kits and 31,864 jerry cans (OCHA, 2022).

The coordination of the humanitarian response is centralized under the Government of Pakistan, which has established the NFRCC. The NFRCC, comprising representatives from federal stakeholders, provincial governments, and the Pakistan Armed Forces, oversaw the national

response to the monsoon rains and floods, ensuring a comprehensive and organized effort (UN, 2022).

In October 2022, the Government of Pakistan sought assistance from international organizations, including the United Nations (UN), the Asian Development Bank (ADB), the European Union (EU), and the World Bank. The purpose was to conduct a Post-Disaster Needs Assessment (PDNA) following a series of floods. This assessment was a crucial initial step in evaluating the scope of damages and losses incurred, as well as determining the requirements for recovery and reconstruction efforts in the aftermath of the natural disaster.

The UN provided technical assistance in improving the gender responsiveness of assessments such as the PDNA and the 4RF. This support aimed to ensure that the assessment processes and subsequent recovery initiatives consider and address gender-specific considerations, promoting a more inclusive and effective approach to post-disaster recovery efforts (UN, 2023). The 4RF serves as the strategic policy and prioritization document for the Government of Pakistan. This framework plays a crucial role in guiding the nation's efforts in recovery, rehabilitation, and reconstruction following a disaster. Adopting a globally recognized approach and methodology for the development of recovery strategies, the 4RF is informed by the outcomes of the Post-Disaster Needs Assessment 2022 (PDNA 2022). The 4RF outlines sequenced priorities across various sectors and is structured around four Strategic Recovery Objectives (SRO). It includes a comprehensive policy framework, a financing strategy, and arrangements for implementation and monitoring. By incorporating these elements, the framework provides a systematic and organized approach to address the challenges posed by the disaster, ensuring a coordinated and effective recovery process for the country (MoP, 2023).

Pakistan's Armed Forces, comprising the Army, Air Force, and Navy, collaborated in extensive relief efforts, deploying a total of 97 helicopter sorties for search-and-rescue operations and the delivery of aid to regions inaccessible by land. The Army has contributed significantly by providing 1,973 troops, while the Air Force and Navy have respectively deployed 340 and 200 troops to support ground response efforts. In addition to human resources, the Navy and Air Force transported approximately 19,120 liters of water to the affected areas. The collective efforts of the three branches have resulted in the provision of essential supplies, including 4,110 tents, 31,369 food packs, and 1,259 tons of ration. Furthermore, they have established 119 medical camps to offer crucial assistance to those in need, showcasing a comprehensive and coordinated response from the Pakistan Armed Forces in the face of the disaster (OCHA, 2022). The government led response to the flood 2022 has provided humanitarian relief and assistance to the people. The flood 2022 response was largely conducted by national and local charities as well that provided food and non-food humanitarian supplies in addition to cooked ready food to millions of floods' affected people. Due to a big role by the local humanitarian actors, side by side the government, the response to the floods 2022 is largely described as a locally-led response though the UN agencies and other global humanitarian partners also played their role not matching to the level they did in floods 2010 response due to presence of a smaller number of global humanitarian agencies in Pakistan at the time of floods 2022.

Revised UNOCHA Response Plan 2023 (15 December 2023)

According to the UN Office for the Coordination of Humanitarian Affairs (UNOCHA), the Flood Response Plan as on 15 December 2023 fetched $583 million, 83 per cent of the total funds required worth $816m. The lessons learned from the 2022 floods response suggest that the response has been largely undertaken by local philanthropists, charities, governments' line agencies, and humanitarian actors through sector-specific coordination and response mechanism. Later on, some Geneva pledges (Conference, 09 January 2023)[6] provided some funds which were largely loans and not grants. Thereby, the response has been seen as a debt reliant inadequate climate and anticipatory financing[7]. Moreover, despite substantial progress, diverse challenges and variations called for the continued necessity for efficient, inclusive, and purposeful coordination within the humanitarian sector with anticipatory DRM and climate change adaptation (CCA) approaches. In the 34 prioritized districts, humanitarian partners provided humanitarian aid to 7.9 m people (83pc of the 9.5m target) through the Floods Response Plan, leaving a gap of 1.6m. About 10.5m people still require aid, facing challenges such as limited access to clean water and health services, heightened food insecurity, and malnutrition.[8]

While two-thirds of those displaced have returned home a year later, 1.3m people are still reported to have been temporarily displaced in Sindh, Balochistan, and KP, with 0.9 million in the five badly-hit districts of Sindh. This situation has been posing protection risks amid pre-existing vulnerabilities of the affected population. The UNOCHA Response Plan 2023 says about 10.5m out of 36.7m people living in rural areas rendered to be highly food insecure, categorized in Integrated Phase Classification during April and October 2023 across 43 analyzed districts of Sindh, Balochistan and KP. Around 5m under-five children across the country, including around 1.5m live in flood-affected areas, need critical nutrition services. The recently conducted IPC acute malnutrition analysis assesses that over 2.1m children living in the 32 flood-hit districts are affected by acute malnutrition; they are in dire need of treatment. Approximately 8m people, half of them children, lack access to safe water in flood-hit regions, with over 500,000 households lacking sanitation. This situation alarms to outbreak of preventable diseases.[9] Millions of damaged houses need large scale reconstruction.

The large-scale housing reconstructing plans are being deployed with support from the government, especially in Sindh through Sindh People's Housing for Flood-Affectees (SPHF) which is undertaking huge task of building 2.1m housing units. The SPHF model of building housing units is getting applaud from the World Bank and other global institutions as a good case study model of building a large number of houses through empowering the communities, especially women in the communities who are not only given financial resources to build houses,

6 https://mofa.gov.pk/international-conference-on-climate-resilient-pakistan-geneva-9-january-2023/

7 Harvey, P., Stoddard, A., Sida,L., Timmins,N., Ahmad, S.M., Breckenridge,M.J., and Jillan, S. (2022) *Floods in Pakistan: Rethinking the humanitarian role*, https://www.humanitarianoutcomes.org/sites/default/files/publications/pakistan_floods_1122.pdf

8 Amin Ahmed (2023), Flood response plan largely funded, published in Daily Dawn on December 19, 2023, https://www.dawn.com/news/1799077/flood-response-plan-largely-funded-says-un-report

9 ibid

they are provided with training as masons and a leverage to influencing housing decisions being the authorized operators of bank accounts for payments.[10] Despite this highly applauded housing model, however, still there are some concerns over remaining transitional shelter needs and related vulnerabilities remain high. The Response Plan estimates that around 50pc of the households in flood-hit areas require winter assistance being prone to winters.

The 9.2m out of 14.6m people got assistance in the prioritized districts in food security and agriculture sector. The Plan notes that amid enough donation for humanitarian assistance increased which enabled the authorities to reach out to 9.2m against the original target of 4m people. The UNOCHA Response Plan 2023 says that the food aid reached 5.3m, with half receiving a single distribution. Livelihood support extended to 3.9m, including agriculture inputs for 1.2m for winter and summer crops. Livestock health aid benefited 486,000, while cash assistance reached 1.2m people. Furthermore, cash-for-work initiatives helped over a million, with 143,000 benefiting from irrigation channel rehabilitation.

According to the UNOCHA report, as many as 5,000 individuals received support through animal shelter restoration, and 2.7m mothers received counselling on optimal infant and young child feeding. Over a million children were provided with multi-micronutrient powders to combat deficiencies. The nutrition sector is grappling with a substantial caseload of malnourished children, with approximately 5m children nationwide, including 1.5m live in areas affected by floods requiring critical nutrition services. The UNOCHA report highlights how the response plan catered to the needs of the people though the entire population hit by floods could not be catered through the plan, but still it has been a useful plan to reach out and support to the affected people.

Role of Humanitarian Partners in 2022 Floods

Humanitarian partners, though smaller in number as compared to flood 2010 time, supported the government-led response, targeting some 5.2 million out of an estimated 6.4 million people in critical need over the next 6 months. The UN has already mobilized nearly US$7 million for its response to the floods, including redirecting existing programs and resources to meet the most urgent needs while efforts continue to further scale up the response. The humanitarian community also supported a government-led multisectoral rapid needs assessment (RNA) to assess the impact of the floods in 10 districts of Balochistan in August 2022 and continued to support further RNAs in other affected areas.

Beyond government and UN efforts, individuals and charities in Pakistan actively mobilized their resources to provide humanitarian assistance to those affected by the floods. Local communities opened their doors to displaced individuals, engaged in search-and-rescue operations, and approximately 90 national non-governmental organizations played a crucial role in providing humanitarian assistance (CDP, 2023). The government of Pakistan granted permission for 23 INGOs to engage in relief and rehabilitation efforts in areas affected by floods. This decision came alongside calls to lift a ban on relief organizations that had been expelled from the country in 2018.

10 https://twitter.com/SphfOfficial/status/1741386948940566555?ref_src=twsrc%5Egoogle%7Ctwcamp%5Eserp%7Ctwgr%5Etweet

Following this approval, member organizations of the PHF swiftly mobilized resources amounting to $7.5 million to address the needs of people residing in the disaster-stricken areas. A total of 22 PHF member organizations, including Action against Hunger (ACF), CARE International, HelpAge, HHRD, Helvetas, Human Appeal, IMC, International Rescue Committee, Islamic Relief, Muslim Aid, Muslim Hands, NCA, Qatar Charity, Relief International, Save the Children, Tearfund, SIF, WHH (Welthungerhilfe), CBM, Aga Khan Agency for Habitat (AKAH), WaterAid, and Mercy Corps, played a crucial role in the response.

Their extensive efforts reached 153,898 beneficiaries with food assistance, 46,444 beneficiaries with Water, Sanitation, and Hygiene (WASH) assistance, 488,146 beneficiaries with health services, 12,130 beneficiaries with Non-Food Items (NFIs), 61,675 beneficiaries with cash grants, 5,059 beneficiaries with shelters, and 10,315 beneficiaries with education facilities. This collaborative response reflects a comprehensive and coordinated effort to address the multifaceted needs of those affected by the floods (PHF, 2022).

Contribution by Pakistan Resilience Partnership (PRP)

The flagship regional platform of Asian Preparedness Partnership (APP), was founded by six countries of Asia including Pakistan for improving the preparedness and emergency response to disasters by strengthening the capacity of local humanitarian actors. The initiative is being implemented by Asian Disaster Preparedness Center (ADPC) with support from the Bill and Melinda Gates Foundation (BMGF). In line with the regional initiative, Pakistan Resilience Partnership (PRP) was established in 2018, with government, LNGOs, private sector, media and academia as its partners, with an aim to improve the interface and coordination between the partners. The PRP is contributing towards strengthening the disaster preparedness and emergency response capacity at national and local levels in disaster-prone areas within the country.

In response to the devastating floods of 2022 ADPC with support of BMGF provided support to PRP for implementation of “Project on Locally-led Emergency and recovery Actions in Pakistan (LEAP)” with the objective to “strengthen the locally-led emergency response and early recovery actions by Pakistan Resilience Partnership (PRP) to reduce the impact of floods on the affected communities”.

The project played a vital role in bringing all stakeholders together both at provincial and national level through coordination meetings. These meetings provided an opportunity for stakeholders to discuss the current response and recovery actions to highlight the gaps and challenges. In additional the project also endeavored to collect and consolidate relief and recovery information at in one place by acquiring the information from all stakeholders. To strengthen National Emergency Operation Center (EOC), the project provided support in acquiring equipment and human resource for EOC.

The contributions from the private sector and academia was also consolidated for sharing with the stakeholders. This was possible by providing a dedicated resource person for private sector coordination through the LEAP project. This was the first time in the country that their contributions were recognized along with the other traditional stakeholders.

Lesson Learned – Floods 2022

In August 2022, one of the most severe foods in the history of Pakistan was triggered due to the exceptionally high monsoon rainfall (Faisal Mueen Qamer, 2023). The capacity of the Indus River System (IRS) to manage and absorb flood peaks was significantly diminished due to a range of unsustainable land use and water management practices. These practices involve the ongoing overexploitation of mountain ecosystems, illegal encroachments in riverbeds, artificial alterations to natural river flows, and haphazard infrastructural development in both the main Indus River and its tributaries.

In the upstream areas, these unsustainable land use practices have exacerbated surface runoff, leading to destructive flash floods in the western mountain regions. Conversely, in the downstream, these practices coupled with unregulated urban development and poorly planned physical infrastructure such as roads, bridges, canals, and culverts, have obstructed the smooth flow of water within the IRS. This obstruction prevents floodwaters from following their natural course to the sea, impeding the system's ability to manage and channel water effectively. The cumulative impact of these unsustainable practices both upstream and downstream has significantly compromised the IRS's overall resilience to floods and its capacity to navigate water through its natural pathways to the sea.

Climate Change and its Impact on Vulnerable Sectors

Climate-induced disasters disproportionately impact the most vulnerable populations, particularly those in poverty. In Pakistan, floods alone have forced an additional 9.1 million people into poverty, resulting in a 4 percent increase in the nation's poverty rate from the 2018-19 rate of 21.9 percent, as reported by the World Bank.

The global community’s response has fallen well short of what was needed. Unfortunately, the global response has not met the required level. Pakistan's flood response plan remains significantly underfunded. Pakistan's flood response plan is notably underfunded, despite pledges exceeding $10 billion made during an international conference in January 2023. However, a substantial portion of this assistance, around 90 percent, will come in the form of loans with a three-year availability period, requiring eventual repayment. Given the severity of Pakistan's situation, there is a pressing need for wealthier nations, along with institutions like the World Bank and IMF, to amplify their support for the country's extensive recovery efforts.

Circular Debt - Issue

Pakistan is trapped in a vicious debt spiral, pulled downward by a climate disaster and an economic crisis colliding with an unjust global financial system. The compounding factors include widespread flooding, resulting in substantial losses in crops, livestock, and infrastructure. Additionally, the global energy crisis triggered by the conflict in Ukraine, fiscal difficulties, and political instability have collectively contributed to an unprecedented surge in inflation levels in Pakistan and rest of the world. Other countries may have the capacity to cope with this situation but Pakistan after heavy losses and damages in floods 2022 alone cannot come out of this humanitarian crisis. That is why Pakistan in collaboration with G77+ China pushed the agenda of setting up of Loss and Damage Fund at the COP27 at Sharm El Sheikh and finally the fund has been make functional with a few hundred million dollars at the COP28 in Dubai in December

2023. The developing countries including Pakistan that are bearing the brunt of climate hazards and call for climate justice demand more funding in Loss and Damage Fund as the current state of funding is just a peanut against what is required to meet the needs of the countries devastated in climatic disasters.

The consequences of debt reliant recovery and rehabilitation plan poses severe challenges for Pakistan whose economic outlook is depressing, with projections indicating a meager GDP growth of only 0.29 percent in Fiscal Year 2023. This stark decline is a sharp contrast to the 6.49 percent growth recorded in 2021, underscoring the severity of the current economic situation. The convergence of climate-related disasters and broader economic issues has created a perilous environment for Pakistan, highlighting the urgent need for comprehensive and equitable financial support to break free from this detrimental debt cycle (Cleetus, 2023).

Strengthening of Local Humanitarian Architecture

There is a dire need to further strengthen the humanitarian architecture at local level. The emergency management structure in Pakistan requires a thorough reassessment and enhancement. The increasing intensity and frequency of disasters underscore the necessity for a more sophisticated and adaptable approach. Implementing a scenario-based mechanism would enable a more prompt and effective response to these disasters. This includes simplifying and clearly identifying roles and responsibilities of various government bodies to reduce confusion, duplication of roles and enhance coordination. The creation of extra bodies on need basis should be minimized especially at the national level. Greater resources should be allocated for the DDMAs to strengthen their response capacities.

Flood Early Warning System

The flood early warning system was not widely disseminated to communities in the language they understand, and where it reached, communities were ill-prepared, reluctant to evacuate, and lacked confidence in forecasts. Gaps in emergency response included the unavailability of local stocks in affected areas, leading to communities, including women and children, without food, water, medicines, and shelter for day(s). Damaged roads and communication networks hindered transport, and designated escape points or camp sites were lacking. In areas with camps, facilities, especially latrines for women, were insufficient. Despite limited resources, local NGOs and civil society were more proactive in many areas.

Coordination

Coordination emerged as one of the most complex aspects of the relief phase, with challenges at various levels, including center-province, government-UN, inter-agency, and within the humanitarian community. Parallel decision-making body like NFRCC created confusion about mandates, necessitating immediate attention. A review of the role of parallel bodies, alongside a reassessment of the National Disaster Management Act, is suggested to ensure clear definitions of mandates, roles, and responsibilities. PRP under the LEAP project actively organized coordination meetings at provincial and national levels. These meetings provided an opportunity for all stakeholders to come together and identify issues and challenges that are being faced by the community and the humanitarian partners.

Early Warning and Risk Sensitive Urban Planning Information

Appropriate early warning messaging could not timely reach to the people who could not gauge the intensity and nature of the floods in 2022, which resulted into delayed evacuation. Since the floods 2022 hit a large size of urban areas, the people need to be trained and informed on Risk Sensitive Urban Development to protect them from future such super floods.

Recognition of Private Sector and Local Philanthropist

Private sector, local charities and philanthropists played a great role in humanitarian response in 2022 floods. Their contribution comparing to other disaster was much more during the recent floods. There is a need to devise a mechanism to identify their contributions in the over disaster response. Highlighting and recognizing their efforts will motivate others in contributing towards the national causes which will further reduce the country's dependence on foreign contribution. PRP played a vital role in recognizing the contributions of private sector during the flood response by collecting and consolidating their response information through various private chambers. In the case of local philanthropists' and charities a comprehensive mechanism is required to collect their information in a uniform pattern so that their contributions can be recognized and brought into the nation funding streams.

Effective Land use Planning

The capacity of the IRS to manage and absorb flood peaks has significantly diminished due to a range of unsustainable land use and water management practices. The incorporation of DRR into Public Sector Development Projects (PSDPs) is crucial for enhancing overall preparedness and resilience.

Uniform Data Collection Tools

Data is the backbone of policy and planning. There is a huge gap in data authenticity and availability. Most of the data is not available from the relevant organizations. There is no uniformity in the data collection tools and formats within the government and among humanitarian stakeholders. Each entity is using its own formats and methods for data collection which make it very difficult to assess the overall picture of the response and recovery initiatives. The government needs to standardize and enforce uniform formats and reporting channels so that all the information from various sources can be consolidated at one place. PRP contributed towards the development of uniform data collection formats during the flood response and recovery by consolidating the common information from various stakeholders. Further work is needed to refine and get these formats endorsed by the government department so that they can be formally implemented during any future disaster.

The Floods 2022 Response had commendable aspects but faced notable challenges. Issues included an inappropriate Disaster Risk Reduction mechanism, insufficient community preparedness, and flawed early warning systems. The response plan was inadequately funded, heavily reliant on debt for recovery, and had smaller grants compared to the 2010 flood response. Donor pledges were highly debt-dependent, posing long-term recovery challenges. Presence of limited humanitarian actors also posed significant challenge.

Way Forward- General and Based on Communities Perspective

Below paras covers the way forward both general as analyzed based on broader perspectives on the DRM discourse and as thematic perspectives from the communities so that this case study provides a practical approach to move forward toward an anticipatory and proactive DRM in Pakistan.

General

The emergency management structure in Pakistan requires a thorough reassessment and enhanced structural strengths. The increasing intensity and frequency of disasters underscore the necessity for a more technology oriented, anticipatory, and adaptable approach towards DRR practices and overall DRM mechanism. Implementing a scenario-based mechanism would enable a more prompt and effective response to the forthcoming disasters.

In essence, a revised and anticipatory emergency management framework is essential to address the evolving nature of disasters in Pakistan and to better safeguard the lives and well-being of its residents. Pakistan has different types of topography stretching from the north to south; therefore, there is a need to tailor crisis response mechanisms to the specific topography and locations of the disaster events, as well as the unique needs of the affected communities, especially, there is a need to develop local adaptation plans of action/DRR and contingency plans at local levels. This customization will help align emergency management strategies with the diverse challenges posed by different geographical areas and community characteristics with anticipatory localization approach.

There is a need to establish a centralized platform for coordination and collaboration at the national level to plan and execute developmental and aid-related projects. It will help to address the issues of the communities equally. There is a lack of coordination among the relevant stakeholders in DRR/preparedness actions and responding to disasters. It is essential to revisit the existing mechanisms to ensure effective collaboration and communication among the parties involved. This reassessment is necessary to enhance overall efficiency and responsiveness in dealing with disasters.

There is a need to introduce the “Impact Based Weather Forecast System” in Pakistan, which should include information on the impacts of the weather on agriculture, human health, infrastructure, etc. It will help us in the preparedness and mitigation of disasters.

Data is the backbone of policy and planning. There is a huge gap in data authenticity and availability. Most data are not available from the relevant organizations. There is a dire need for updated and authentic datasets on population, availability of water, climate change impacts on agriculture, food, health, and other sectors so that evidence-based policies and interventions can be put in place.

The incorporation of DRR into PSDPs back by budgetary resources is crucial for enhancing overall preparedness and resilience. The anticipatory DRR involves a systematic approach to identifying, assessing, and mitigating the risks associated with natural and human-made disasters. By integrating DRR into public sector initiatives, such as development projects aligning with SDGs

targets, the governments can proactively address potential hazards and reduce the impact of disasters on communities and infrastructure.

Community Perspective on Disaster Management in Pakistan

Designing response strategies for disaster risk requires knowledge about and understanding of climatic hazards and disasters, prevention and preparedness strategies and the impacts by all stakeholders, especially the communities. However, rural communities in Pakistan lack such opportunities to respond or prepare for climate disasters. For this case study, community perspectives were sought through FGDs and interviews from Balochistan, Sindh, and Punjab. Following is the crux of the community perspective on some of the key issued emerged.

Access to Information

The respondents told that they had limited sources of prior to, during, and after disaster/flood as the government agencies, NGOs, and local authorities were providing only partial information to the communities. Baseline data for disaster preparedness, appropriate coordination, and timely information were not available for a coordinated response during the emergency. The inadequate information is not enough as cell phones were the only source of information available to at risk-communities for receiving early warning messages. This calls for adopting strategies to reach out to at risk-communities to cater to their information needs on disaster risks, early warning messages, and a well-informed humanitarian response. A centralized communication platform for real-time data sharing may contribute to prepare an anticipatory, effective, and collaborative disaster response. The absence of public awareness/information dissemination campaigns would impact evacuation procedures, causing confusion and delays in rescuing the people.

Early Warning

According to the respondents, there has been inappropriate early warning systems for floods or heavy rain at the community level. Instead, community members rely on mobile phones and the internet for weather updates. This lack of comprehensive early warning systems indicates a weak preparedness against disasters and absence of dissemination of risk related information to the communities. The respondents/members hailing from the local communities in the provinces opined that though some sort of early warning messages were coming up to them, however, a proper mechanism to relocate them to the established rescue camps was nonexistent. They lamented improper role of the duty bearers which notably created miseries for women, children, and people living with disabilities during the disasters.

They suggested that an effective and clearly worded early warning messages could help the community take proactive measures to protect themselves and their assets from potential disasters. There is a need to specially design early warning messages in the context of risk sensitivity of urban floods as the floods 2022 have largely impacted the urban areas in Sindh.

Capacity Building Opportunities

The respondents, both KIIs and FGDs were of the view that the government and NGOs in disaster-prone areas focused on humanitarian response as a reactive approach; in future, it would be better if they adopt anticipatory DRR approach and impart training to communities on the CBDRM. They say despite their desire to receive CBDRM training as a group, no specific programs related to

DRR training were initiated. Training workshops and awareness campaigns empower the community to identify local risks and contribute to tailored DRR strategies and solutions. The lack of community-level training in disaster preparedness makes it difficult to coordinate effective response during emergencies, hindering timely assistance. Comprehensive training programs, community-based workshops, and integration of traditional knowledge with modern frameworks are essential measures.

Community Preparedness

Preparing the communities amid anticipatory scenario based DRR actions would build their resilience and reduce vulnerability against disasters. The prepared community would be better equipped to minimize the impact of future disasters. To improve community preparedness for DRR, the respondents recommended to establish EWSs, conduct regular community training, and foster collaborative partnerships among government agencies, NGOs, and local communities. To undertake all these actions, there is a dire need for strong institutions right from local and provincial levels to the federal level.

Rehabilitation and Settlement

The respondents narrated the losses and damages to crops, livestock, income, and houses and expressed the view that rehabilitation and resettlement usually mean that they are left to look after by the affectees themselves. Locals have emphasized the need for a better infrastructure, robust economic compensation, or credit for them to bounce back better coupled with livestock and agricultural support to be able to go back to pre-disaster economic situation. Most of the farmers engaged in agriculture do so on credit and are only able to return the amount after harvesting and getting profits. In case of the floods, such ripe and ready crops and land are decimated thereby entrapping the farmers in a vicious debt cycle. The respondents from the communities suggested immediately starting work around disaster risk reduction measures of vulnerable communities and set up a process of financial and physical rehabilitation.

The community members stressed the need for a better understanding of the vulnerabilities of each Union Council, rather than one size fitting all policy. They also acknowledged the lack of government's fiscal space to provide a comprehensive rehabilitation process. Globally, any initiative or rehabilitation process requires dedicated government attention coupled with a substantial amount of funding to adapt to the impact of climatic hazards. In Pakistan's case as the climate induced disasters will continue to wreak havoc more regularly, there is a need to rigorously assess avenues to finance its climate change related actions and plans to make the local communities and the country resilient.

Loss and Damages

Almost all the participants of the FGDs and KIIs from Balochistan, Sindh, and Punjab (south) talked about losses and damages as a result of the floods. The orchard in Balochistan, crops in Sindh and part of Punjab were among the losses and damages to houses, road, and other infrastructure. The sources of drinking water and food were hugely damaged. They confirmed the data released on losses and damages by the government as result of the PDNA 2022.

Overall Suggestions as Way Forward by the Community Members

To ensure community-level preparedness and anticipatory DRR practices to minimize losses and damages, several key measures are needed. Firstly, comprehensive training programs should be organized to educate community members about disaster response protocols, evacuation procedures, and basic first aid. Secondly, the implementation of localized early warning systems, coupled with regular drills, can significantly improve readiness for emergencies. Thirdly, fostering partnerships between government agencies, NGOs, and communities will promote effective coordination and resource allocation during crises. Furthermore, community-based workshops and awareness campaigns can empower residents to identify local risks and contribute to tailored DRR strategies. Lastly, integrating traditional knowledge and local practices into modern disaster management frameworks can enhance overall resilience. By prioritizing these actions, a more resilient and prepared community can emerge, better equipped to minimize the impact of future disasters.

To enhance disaster preparedness, response, and recovery efforts, it is recommended to establish localized EWS, conduct regular community training, and foster collaborative partnerships between government agencies, NGOs, and local communities. Launching comprehensive public awareness campaigns, developing tailored emergency plans, and investing in infrastructure readiness, particularly in remote areas, are crucial. Continuously reviewing and refining disaster management policies, integrating local knowledge, and ensuring equitable resource allocation are imperative. Leveraging technology for real-time monitoring, supporting research and innovation, and establishing inclusive disaster governance structures will contribute to a comprehensive approach that enhances resilience and minimizes the impact of future disasters.

Dedicated Support for Disaster Response

The vulnerability of the country results in frequent disasters, especially floods. The dedicated funding support for emergency response and recovery plays a vital role in elevating the suffering of the affected people. The donors should be encouraged to extend financial and technical support during any emergencies.

Conclusion

The floods in Pakistan in 2010, 2011, and 2022 have presented a grim outlook for the future, particularly considering the anticipated rise in the frequency and intensity of extreme weather events due to climate change. These recurring floods have left a trail of devastation, impacting both human lives and critical infrastructure.

In 2010, 2011, and 2022, an estimated 55–60 million people were affected by the floods, resulting in a tragic death toll exceeding 3500. The 2011 floods were highly destructive, submerging an extensive area of over 21,000 km2, displacing 5.9 million people, and causing widespread damage to roads, railway tracks, forests, and agricultural land. In the subsequent year of 2012, floods affected 13,157 km2 across 22 districts, causing significant harm to agricultural areas, roads, and railway infrastructure. The trend continued into 2022, where severe flooding impacted 33 million people, claimed over 1739 lives, and caused substantial damage, compelling millions to evacuate.

Moving to 2023, the period from June 25 to September 30 witnessed heavy monsoon rains and flash floods, resulting in 226 fatalities, 349 injuries, the evacuation or rescue of over 543,567 people, and damage to 5,813 houses. These recurrent flood events underscore the persistent vulnerability of Pakistan to extreme weather, emphasizing the pressing need for an effective disaster management and mitigation strategies in the region.

The vulnerabilities of Pakistani society to such hazards are multifaceted. Inadequate construction practices, suboptimal livestock and agricultural management, and a fragile natural environment contribute to the risks. Weak EWS, limited awareness and education, and widespread poverty further exacerbate these vulnerabilities. Insufficient communication infrastructure and critical facilities compound the challenges faced by communities. In mountainous regions, the lack of secure land for construction, dispersed settlement patterns, and harsh climatic conditions heighten vulnerabilities. Together, these factors emphasize the intricate and interconnected nature of the challenges, underscoring the urgent requirement for comprehensive and integrated disaster resilience strategies in Pakistan.

The Government of Pakistan typically faces challenges absorbing the financial losses resulting from disasters, often depending on post-event donor funds to cover expenditures. This ex-post risk financing strategy has proven to be inadequately funded, resulting in a financial gap after the occurrence of a disaster. To address this issue, it is recommended for the government to explore the development of a country's catastrophe risk financing strategy based on anticipatory DRR and Climate Change Adaptation actions.

This strategy could involve relying on reserves to finance more frequent but less severe hazards, using contingent credit facilities to cover the mezzanine layer of risk, and considering (parametric) insurance or catastrophe bonds to address the upper layer of risk. By adopting a more proactive, anticipatory, and diversified approach to risk financing, the government aims to enhance its financial resilience and ensure a more effective response to disasters, reducing reliance on post-event donor funds/debt.

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Pakistan Resilience Partnership (PRP) was established in 2018, under the umbrella of NDMA in 2018. The objective of the PRP is to improve the interface and partnership between PRP partners namely government, local humanitarian organizations, private sector, media and academia for enhancing their capacities through partnerships, knowledge resources, training, and networking opportunities.

The Pakistan Resilience Partnership is contributing towards strengthening the disaster preparedness and emergency response capacity at national and local levels in disaster-prone areas within the country. The PRP strategy aims to develop the local humanitarian networks comprising of National Governments, Local Humanitarian Organizations, Private sector, media and academia, which will result in enhanced coordination and information exchange, during the period of emergencies caused due to disasters.

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