Research Report

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DISASTER RISK FINANCING IN PAKISTAN

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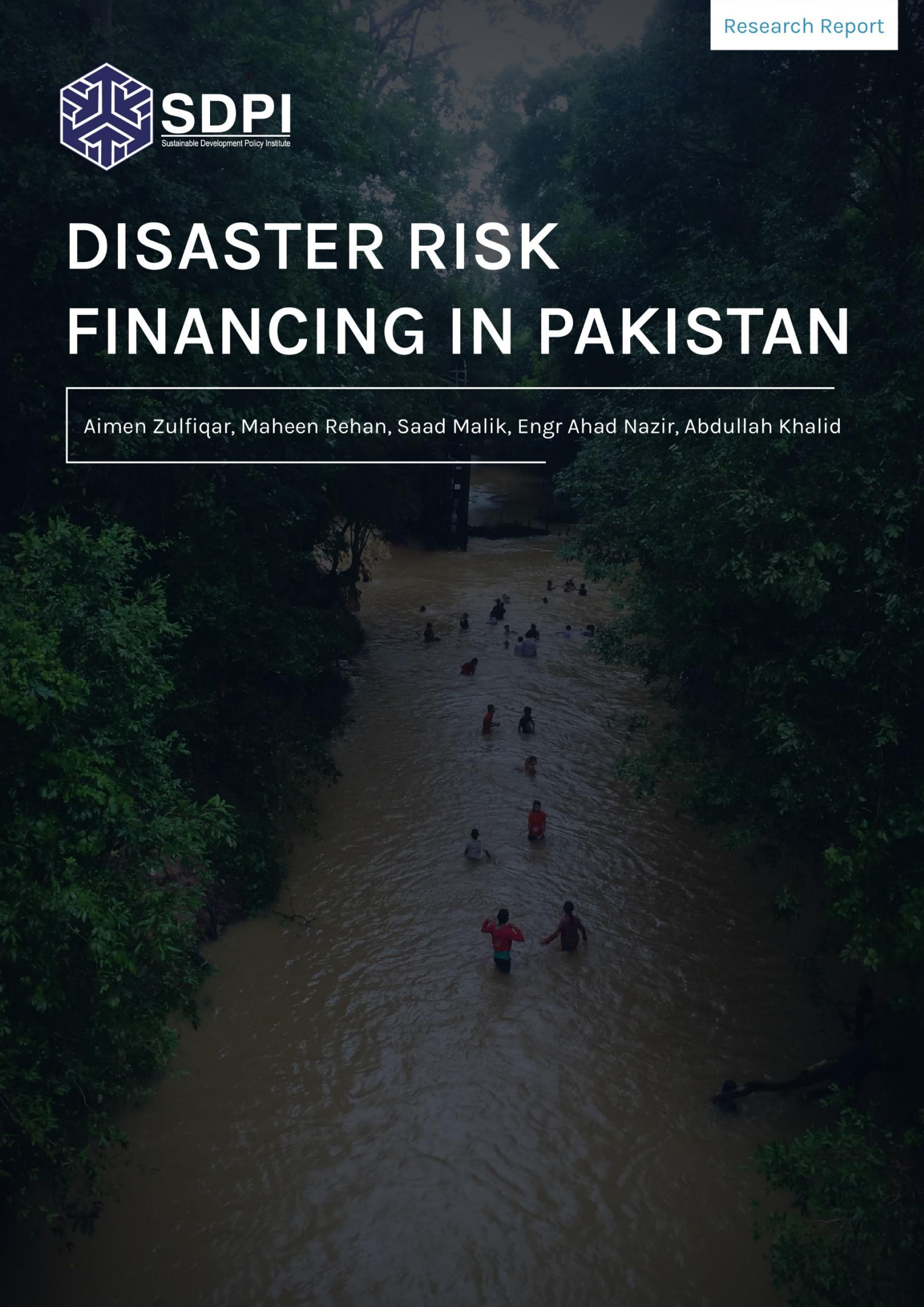

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EXECUTIVE SUMMARY

Disaster risk management is a serious challenge Pakistan is faced with due to continuous natural catastrophes. The 2022 floods, which immersed one-third of the country's territory, incurred an estimated $15.2 billion economic loss and claimed more than 1,000 lives. The country's agriculture sector, which contributes 24% to the GDP and provides employment to 37.4% of the labour force, is highly vulnerable to natural disasters. The study aims is to suggest a resilient system, which is capable of withholding, responding, and recovering from the economic and environmental challenges caused due to natural disasters.

The study indicates that disaster management faces complex institutional limitations that affect the overall effectiveness of response and coordination efforts. Key challenges are the low agricultural productivity, lack of infrastructure, inefficient risk mitigation strategies, and no financial preparedness. The findings of the study propose a multi-dimensional approach to get disaster risk financing, highlighting the integration of private sector engagement, government policies, and international support.

The study suggests allocating sufficient funds, developing climate-resilient agriculture systems, creating credit and insurance mechanisms, and implementing gender sensitive disaster management strategies.

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ABBREVIATIONS

ADB	Asian Development Bank
BISP	Benazir Income Support Programme
DRF	Disaster Risk Financing
DRM	Disaster Risk Management
AEL	Annual Expected Loss
PML	Probable Maximum Loss
GDP	Gross Domestic Product
PPP	Public-Private Partnership
IAIS	International Association of Insurance Supervisors
IOSCO	International Organization of Securities Commissions
NICL	National Insurance Company Limited
PRCL	Pakistan Reinsurance Company Limited
SECP	Securities and Exchange Commission of Pakistan
SLIC	State Life Insurance Corporation

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We are especially grateful to the research and coordination team at the **Sustainable Development Policy Institute (SDPI)** Ms. Aimen Zulfiqar, Ms. Maheen Rehan, Mr. Saad Malik, Mr. Abdullah Khalid, and Engr. Ahad Nazir for their dedicated efforts, technical expertise, and policy insights throughout the drafting of this report.

We extend our sincere appreciation to the **Bank of Punjab** for its invaluable partnership in organizing the policy dialogue and for its commitment to disaster resilience and public-private engagement in climate risk financing. Their support and perspective significantly enhanced the depth of this report.

We are also thankful to the experts, stakeholders, and representatives from government bodies, international organizations, civil society, and the private sector who shared their time and insights during interviews, consultations, and discussions. Their input was instrumental in identifying policy gaps and shaping practical recommendations for Pakistan's disaster risk financing framework.

Lastly, we acknowledge the broader community of respondents who contributed through survey responses and dialogues. This report is a testament to collective commitment to strengthening disaster preparedness and resilience in Pakistan.

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FOREWORD

The report, *Disaster Risk Financing in Pakistan*, represents a critical milestone in the nation's ongoing efforts to strengthen climate resilience and reduce the socio-economic impacts of natural disasters. Developed collaboratively by the Sustainable Development Policy Institute (SDPI) and The Bank of Punjab in 2025, this pioneering research offers a holistic examination of the strategies, frameworks, and partnerships needed to finance disaster preparedness, response, and recovery in Pakistan.

This study provides an in-depth analysis of Pakistan's exposure to natural hazards especially floods and earthquakes highlighting the financial vulnerabilities across sectors and regions. Through a mixed-method research approach, it synthesizes empirical evidence with insights gathered from extensive stakeholder consultations, literature reviews, and the High-Level Policy Dialogue on "Disaster Risk Financing in Pakistan." These engagements underscored the urgency of moving from reactive to proactive disaster risk management.

Key contributions of the report include a detailed examination of national and global disaster risk financing models, an overview of the roles played by government institutions, the private sector, civil society, and multilateral development partners, and practical case studies from various countries. It underscores the necessity of integrated and adaptive financing tools such as insurance mechanisms, risk transfer instruments, and concessional credit to ensure rapid and equitable post-disaster recovery.

The *Disaster Risk Financing in Pakistan* report also emphasizes the importance of inclusive financing approaches, with special attention to gender-sensitive disaster management and the protection of vulnerable populations. It calls for enhanced public finance allocations, sustainable infrastructure development, and climate-smart agriculture and irrigation systems.

This work is a testament to SDPI's commitment to evidence-based policymaking and multi-stakeholder collaboration. I commend the research team for producing this technically rigorous and policy-relevant report. It is our hope that this report will serve as a foundational reference for practitioners, policymakers, and development partners working to build a disaster-resilient and financially prepared Pakistan.

1. INTRODUCTION

1.1 OVERVIEW

Incidents that occur in natural environment often turn into disasters. They adversely affect human lives and activities, causing casualties, property losses, and socio-economic disruptions. Disasters are generally classified into two forms:

1. Meteorological: such as floods, droughts, typhoons and frost, hurricanes, hail, and heavy snow; and
2. Geological: such as tsunamis, landslides, debris flows, volcanic eruptions, and earthquakes.

According to INFORM (Subnational Risk Index 2022), risk has three dimensions, i.e, hazards & exposure, vulnerability, and lack of capacity to cope. [1] Firstly, the hazard and exposure of any disaster depends upon the nature of a calamity whether it is flood, earthquake, drought, pandemic, or any other and to whom it affects, and the intensity of a disaster. Secondly, the vulnerability of a disaster causes socio-economic deprivations among affected communities in terms of food insecurity, homelessness, unemployment, poor health & well-being, and poverty. Lastly comes the lack of capacity to cope with a disastrous situation. To cope with the disastrous events, a disaster finance mechanism is required, which may evaluate the causes of possible disasters, the circumstances under which the risks may rise and intensify, the exposure and vulnerability of the country to the destruction, and requirement of public financing if disasters come out. The risks of some disasters could be raised by human actions, such as insufficient infrastructure to assist the levels of disaster risk[2].

This study presents a comprehensive analysis, and an overview of the natural disasters occurred in Pakistan over times. It examines the socio-economic impact of these disasters and the measures taken to cope with the situation by the financial institutions, private sector as well as civil society organizations (CSOs). It further accesses the gaps in public finance and suggests a detailed framework for disaster risk financing and resilience based on pre and post-disaster instruments. Furthermore, a global perspective is presented to adopt a tailored approach that is aligned with current circumstances and resources.

1.2. GLOBAL ECONOMIC IMPACT OF DISASTERS

A report of United Nations Office for Disaster Risk Reduction released in 2018, says direct economic losses due to climate-associated disasters had risen by 250% for the period

[1] https://www.undrr.org/publication/bangladesh-inform-sub-national-risk-index-2022?_gl=1*vrai1s*_ga*MTI1MzAxMzE2LjE2NjgwMDM0NzE.*_ga_T3RWEE6Z0J*MTY3MjExODk3Mi4xNS4wLjE2NzIxMTg5NzIuMC4wLjA.

[2] https://www.adb.org/sites/default/files/publication/781646/eawp-047-enhancing-disaster-risk-financing-prc.pdf

between 1998–2017 [3] . During this period, around 1.3 million people killed due to meteorological and geological disasters[4]. The impact of greenhouse gases (GHGs) on the global climate and the occurrence of extreme meteorological events are anticipated to grow intensely and continuously[5]. According to the estimations of the National Oceanic and Atmospheric Administration, the total direct global losses from disasters rose gradually from 1980 to 2018, probably triggered by expanded human activities that preceded climate change. Munich Re, a German multinational reinsurance company based in Munich, reported 820 severe natural disaster events worldwide in 2019 that incurred a loss of around $150 billion with $52 billion being insured. Floods contributed 45% to these disasters whereas 38% happened due to rainstorms or flash floods, 10% because of frosts, heatwaves, and wildfires, and only 7% incidents occurred due to geological reasons. Meteorological disasters took place across the globe with the following percentage as given in parenthesis: Asia (43%), the Americas and the Caribbean (20%), Africa (15%), Europe (12%), and Oceania (2%). Asia was the worst affected in terms of direct losses with around $75 billion. Typhoons Hagibis and Japan's Typhoon Faxai, and China's Typhoon Lekima accounted for almost half of this amount with around $34 billion. The extreme weather incidents classified by typhoons are mostly normal in Asia. In general, India, Pakistan and China also harmed considerably from immense monsoon floods[6].

[3] United Nations Office for Disaster Risk Reduction. 2018. UN 20-year review: earthquakes and tsunamis kill more people while climate change is driving up economic losses. Geneva.
[4] Geological disasters refer to earthquakes and any disasters related to forces of geophysics
[5] The National Aeronautics and Space Administration (United States). 2021. The Effects of Climate Change. Washington, DC
[6] https://www.adb.org/sites/default/files/publication/781646/eawp-047-enhancing-disaster-risk-financing-prc.pdf

2 METHODOLOGY

The study used a mixed method approach to gather data. Quantitative and qualitative data were gathered to include in this research design. In the initial step, an extensive literature review was conducted. Following this, unstructured interviews and consultations were held with the stakeholders to identify the current key challenges, critical issues, and policy gaps. In the final phase of this study, a high-level policy dialogue, titled: “Disaster Risk Financing in Pakistan”, was organized in collaboration with The Bank of Punjab.

3. HISTORICAL ANALYSIS OF DISASTERS IN PAKISTAN

3.1. MAJOR EARTHQUAKES AND FLOODS: TRENDS AND IMPACTS

Natural disasters like earthquakes and floods have hit the land of Pakistan several times. The country experienced intense earthquakes in 1971, 1974, 1997, 2005, 2008, and 2013.[7] However, the earthquakes observed in 1974 and 2005 were massive that incurred an extensive damage with more than 5,300 and 80,000 casualties respectively. According to Federal Flood Commission's Annual Report 2021, Pakistan faced around 28 floods[8], and the 2022 flood was the hardest hit. Table 1 below shows more details of the extreme events in Pakistan.

Table 1: Major Flood Disaster Events in Pakistan[9]

Year	Number of Deaths	Economic cost (US$ in Million)	Flood-affected Area(Sq-Km)
1950	2190	488	17,920
1956	160	318	74,406
1973	474	5134	41,472
1976	425	3485	81,920
1978	393	2,227	30,597
1992	1,008	3,010	38,758
2010	1,985	10,000	160,000
2011	516	3,730	27,581
2012	571	2,640	4,746
2013	333	2,000	4,483
2022	1739*	15,233**	38,287***
2023	211****	816****	27000****

Sources *2022 Pakistan Floods - Center for Disaster Philanthropy
**PAKISTAN FLOODS 2022 - Post-Disaster Needs Assessment
***Pakistan: 2022 Monsoon Floods - Situation Report No. 10 (As of 28 October 2022).

[7] Timeline of major earthquakes in Pakistan: 1971-2018
[8] Annual Report 2021
[9] https://ffc.gov.pk/wp-content/uploads/2021/04/2020-Annual-Report-of-Oo-CEA-CFFC.pdf

**** Pakistan: 2022 Monsoon Floods - Situation Report No. 19 (As of 12 August 2023).

To deal with a disaster, there is an initial, intermediate, and final stage of management. At the initial stage, a pre-disaster stage requires capacity building to handle disasters efficiently. It mainly includes risk reduction and preparedness, which is working on the root cause that triggers disaster and reduction in the intensity of loss. The intermediary stage includes preparedness in terms of rescue and relief operations if a disaster happens. Finally, the post-disaster stage demands reconstruction and rehabilitation work after disaster. It involves the reconstruction of devastated infrastructure such as houses, hospitals, schools, roads, bridges, etc. It also includes long-term measures such as permanent shelter, access to safe drinking water & sanitation, access to health facilities, access to quality education, and provision of employment & better working conditions.

For disaster mitigation & preparedness, response, and recovery[10] at the federal level, the National Disaster Management Authority (NDMA) was established in 2007, which works in collaboration with federal and provincial governments, armed forces, local & international non-governmental organizations (INGOs), and other organizations. In the 2005 earthquake, Asian Development Bank, United Nations Development Programme, and many other organizations funded and provided emergency relief. Earlier, Earthquake Rehabilitation & Reconstruction Authority (ERRA) was also set up in 2005 as a direct response to Kashmir earthquake in 2005. ERRA then reconstructed 600,000 houses (ERRA Annual Report 2008-2009). Pakistan Flood Emergency Relief Plan is also in place with initial assistance of $1.9 billion from the UN bodies and INGOs (United Nations 2010). A loan of $200 million from the Asian Development Bank was utilized to strengthen the financial preparedness of NDMA and the reconstruction of transport infrastructure.[11] A $150 million Disaster & Climate Resilience Program was funded by the International Development Association (IDA) and implemented by Punjab Disaster Management Authority & Punjab Irrigation Department in the 2014 flood (World Bank 2015). The aim of this project was capacity building in addition to restoration & reconstruction of infrastructure. In 2016, IDA provided $120 million funds for Sindh Resilience Program to manage the disaster.[12] It takes plenty of resources and dedicated efforts to recover from immensely recurring destructions.

A major role of the private sector and non-governmental organizations (NGOs) has been witnessed in financing disaster risk and relief operations. The Bank of Punjab deployed eco-friendly shelters in Pono village and Rojhan city.[13] Many NGOs like Alkidmat Foundation, Edhi Foundation, JDC Foundation, Akhuwat Foundation, etc. collaborated with Meezan Bank, and Saylani Welfare Trust to take part in rescue and relief operations whether it is 2005 earthquake, or 2010 & 2022 floods. Hence disaster risk is financed by national and international organizations in Pakistan in their capacity to mitigate the impact of disasters.

[10] Phases of Disaster - Restore Your Economy
[11] Proposed Loan Islamic Republic of Pakistan: Post-Flood National Highways Rehabilitation Project
[12] Pakistan Disaster Risk Management Program
[13]For flood affectees of Rojhan city: BOPMadadgar launched with zero-carbon shelters - Pakistan - Business Recorder

Globally, climate change has become a new security threat. All the countries are not equally responsible for this climate crisis.[14] According to IEA Energy Atlas, China, United States, Russia, Japan, and India are among the top GHG emitters that cause natural calamities.[15] Pakistan falls among top 10 economies of the world that are prone to the risks of natural disasters like floods, earthquakes, and heavy storms. Pakistan is not only the victim of severe climatic events for the last few decades but also is still at risk.

Historically, Pakistan had suffered a lot due to natural disasters whether it be the 2005 earthquake that claimed 73,000 lives and incurred $5 billion losses[16] or the 2010 flood that rendered 20 million people vulnerable while incurring a loss of $9.7 billion.[17] After the natural disasters, major developments were the formulation of legal policy and institutional framework, establishment of National Disaster Management Authority (NDMA), Provincial Disaster Management Authorities (PDMAs), and District Disaster Management Authorities(DDMAs) for managing and responding to the risk of any disaster.[18] The 2022 flood proved to be the most terrible catastrophe in the history of Pakistan when one-third territory of the country was inundated by the floodwater. This huge disaster causes an economic loss of $15.2 billion from the overall damage.

A model developed by the National Governors Association to manage a disaster and its aftermaths comprises four steps: i) mitigation, ii) preparedness, iii) response, and iv) recovery.[19] The first two are the pre-disaster efforts; mitigation is the better use of resources to avoid vulnerability, and preparedness is to make people aware about disasters to reduce their intensity. Post-disaster steps are the capacity building to respond or recover from disaster.[20] The intensity of repetitive earthquakes and floods is increasing over time due to climate change. The associated loss is exacerbating and needs more financial support to minimize the economic loss (Ozaki 2016).

Financial protection involves planning to better manage the cost of disaster, ensure predictable and timely access to much-needed resources, and ultimately mitigate long-term fiscal impacts (World Bank 2018). In the case of Pakistan, the World Bank presents seven short, medium, and long-term strategic options to finance the disaster's risk. These options include risk assessment, arrangement of financial solutions, funds' disbursement among beneficiaries[21] and being operational in case of any disaster.

[14] https://climatetrade.com/which-countries-are-the-worlds-biggest-carbon-polluters/
[15] IEA Energy Atlas
[16] The Kashmir earthquake of October 8, 2005: Impacts in Pakistan
[17] Floods to hit economic outlook
[18]Building seismic resilience in Pakistan: 15 years after the 2005 earthquake
[19] Phases of Disaster - Restore Your Economy
[20] https://restoreyoureconomy.org/main/phases-of-disaster/
[21] https://documents1.worldbank.org/curated/en/829791468070733917/pdf/944740WP0P13260ter0Risk0Assessment.pdf

3.2. DISASTER MANAGEMENT PHASES: PREPAREDNESS, RESPONSE, AND RECOVERY

Heavy rains and a combination of riverine along with urban and flash flooding have been pushing the country towards an unprecedented climate-induced disaster since June 2022, causing widespread fatalities, killing livestock, and damaging and destroying public and private infrastructure. Rain persuaded landslides and floods spoiled agricultural land and forests, affecting local environments. The government has declared 84 districts as 'calamity-hit' with 32 districts in Balochistan, 23 in Sindh and 17 in Khyber Pakhtunkhwa[22].

By the end of November 2022, the floodwaters impacted an area of approximately 4,700 km² across Sindh and Balochistan, in contrast to an estimated total of 85,000 km² of Pakistan, which appeared to be significantly affected by the flooding during the peak rainfall period from July to August 2022. The reduced floodwater levels improved the situation and made it possible to access some affected areas. Similarly, the situation also forced the migrators to return to their area of origin. Out of 8 million people, estimated to be refugees as of early October 2022 when the reviewed Floods Response Plan (FRP) was delivered, 5.4 million were displaced as of mid-November.

While floodwater receded in some areas, humanitarian needs persisted both in area of displacements and of return. More than two million homes were severely damaged or destroyed, as were businesses and community infrastructure, while personal possessions, household items, livestock and other assets were washed away or destroyed. In some locations, mainly in Sindh, and in some parts of Balochistan, water has yet to recede and may remain there for several months, extending the gloomy humanitarian condition in these zones[23].

AGGRAVATED EFFECTS OF FLOOD IN WINTERS

With the beginning of winter season (November to February), the receding water shifted to inadequate and improvised places, harmed the shelters, and the dearth of suitable winter clothing, basic household items and safe heating supplies, are causative to put millions of people at risk of illness, disease and protection fears, especially gender-based violence. Built on damage, severity, and tendency for severe weather, 14 districts of Sindh, 10 districts of Balochistan, 09 districts of Khyber Pakhtunkhwa and 02 districts of the Punjab have been recognized as most unprotected to tough winter conditions[24].

[22] file:///C:/Users/SDPI/Downloads/Pakistan%20Floods%202022%20-%20Floods%20Response%20Plan%20-%20Revision%20-%2004%20Oct%202022.pdf

[23] [23] file:///C:/Users/SDPI/Downloads/Pakistan%20Floods%202022%20-

[24] Sindh: Kambar Shahdad Kot, Sanghar, Jacobabad, Shaheed Benazir Abad, Khairpur, Sukkur, Dadu, Matiari, Naushahro Feroze, Umer Kot, Badin, Shikarpur, Tando Muhammad Khan, Jamshoro | Khyber Pakhtunkhwa: /Kohistan Upper, Kohistan Lower, Chitral Upper, Chitral

FOOD INSECURITY AND MALNUTRITION CONCERNS

Around 4.4 million acres of cultivable area, which is sufficient to nurture crops for 14.6 million people, was damaged due to floodwater and more than 800,000 livestock misplaced after the floods. The agriculture sector, including crops, fisheries, livestock and forestry, incurred a loss of over US$12.9. Besides, suitable access to food and nutrition is a growing fear. An additional projected 1.1 million people are at high risk of gliding from crisis (IPC 3) to emergency (IPC 4) circumstances under the Integrated Food Security Phase Classification (IPC). An upsurge in the number of people at IPC 4 to IPC 5 is likely between December 2022 and March 2023. Presently, an estimated 14.6 million people require food support, although over 07 million children and women require instant entrée to nutrition facilities. This comprises around 520,000 children facing severe acute malnutrition (SAM) needing instant treatment, and nearly 80,000 children required imperative medical intrusions because of malnutrition[25].

EDUCATIONAL BASED INEQUALITIES

Pakistan has one of the world's uppermost statistics of out-of-school children. At least 45 per cent of children in flood-affected districts are out-of-school because of the floods. Almost 34,200 schools were damaged or destroyed whereas 96 non-damaged schools were utilized to host displaced people. This has temporarily disrupted the schooling of 3.5 million children and adolescents. Children, especially girls, are at highest risk of permanent dropout. The longer the children are absent from school, the lesser their chances of return are. The extended education distractions are causing learning inequalities[26].

3.3. ECONOMIC ANALYSIS OF EARTHQUAKE IMPACT IN PAKISTAN

The total damage is projected at PKR 3.2 trillion with a total loss of PKR 3.3 trillion (US$15.2 billion), and total requirements of PKR 3.5 trillion[27]. The sectors that affected immensely are housing at PKR 1.2 trillion; agriculture, food, livestock, and fisheries at PKR 800 billion (US$3.7 billion); and transport and communications at PKR 701 billion as per the data(UNOCHA 2022). The transport and communications sector has the highest reconstruction and recovery requirements, i.e. PKR 1.1 trillion followed by agriculture, food, livestock, and fisheries at PKR 854 billion, and housing at PKR 592 billion.[28] The provinces

[25]United Nations Office for the Coordination of Humanitarian Affairs 2022, *Pakistan 2022 Floods Response Plan: Interim Report (September-November 2022*, https://www.unocha.org/publications/report/pakistan/pakistan-2022-floods-response-plan-interim-report-sep-nov-2022-issued-09-dec-2022.

[26]United Nations Office for the Coordination of Humanitarian Affairs 2022, *Pakistan 2022 Floods Response Plan: Interim Report (September-November 2022)*, https://www.unocha.org/publications/report/pakistan/pakistan-2022-floods-response-plan-interim-report-sep-nov-2022-issued-09-dec-2022.

[27] United Nations Office for the Coordination of Humanitarian Affairs 2022, *Pakistan 2022 Floods Response Plan: Interim Report (September-November 2022)* https://www.unocha.org/publications/report/pakistan/pakistan-2022-floods-response-plan-interim-report-sep-nov-2022-issued-09-dec-2022.

[28] United Nations Office for the Coordination of Humanitarian Affairs 2022, *Pakistan 2022 Floods Response Plan: Interim Report (September-November 2022)* https://www.unocha.org/publications/report/pakistan/pakistan-2022-floods-response-plan-interim-report-sep-nov-2022-issued-09-dec-2022.

of Sindh and Balochistan account for approximately 50 per cent and 15 per cent of recovery and reconstruction needs respectively[29].

Table 2 presents regional disparities in damage, losses, and recovery needs, with Sindh and Balochistan bearing the brunt of disasters. Addressing these challenges will require significant financial resources, strategic planning, and inter-provincial coordination to mitigate future risks and build long-term resilience.

Table 2: Damage, Loss, And Needs: An Assessment by Region

Region	Damage		Loss		Needs	
	Billion (PKR)	*Million (US$)*	*Billion (PKR)*	*Million (US$)*	*Billion (PKR)*	*Million (US$)*
Balochistan	349	1,625	541	2,516	491	2,286
Khyber Pakhtunkhwa	201	935	141	658	168	780
Punjab	111	515	122	566	160	746
Sindh	1,948	9,068	2,444	11,376	1,688	7,860
Cross-provincial	587	2,731	14	67	975	4,540
Special Regions	7	32	11	49	10	48
Total	3,202	14,906	3,272	15,233	3,493	16,261

Source: https://www.pc.gov.pk/uploads/downloads/PDNA-2022.pdf/

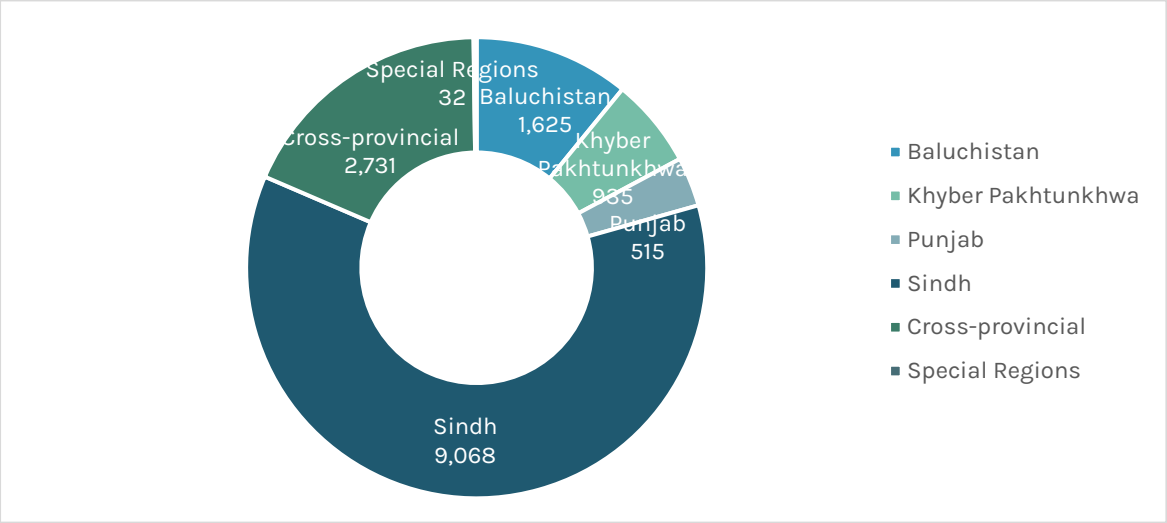
Note: All estimates in this report were calculated in PKR and converted to US$ prior to rounding (US$1 = PKR 214.8 on average between June and September 2022).

AN ANALYSIS OF DAMAGE ACROSS REGIONS

The financial damage caused by natural disasters such as floods and earthquakes in Pakistan varies significantly across regions. Sindh is the most severely affected, with damages amounting to $9,068 million, reflecting its vulnerability due to its geographic location and high population density. Balochistan follows with $1,625 million in damage, likely due to its vast and underdeveloped infrastructure. Khyber Pakhtunkhwa and the Punjab report relatively lower damages at $935 million and $515 million, respectively, though these figures still represent significant economic setbacks. Cross-provincial damages are notable at $2,731 million, indicating widespread infrastructure disruptions. Special regions, while less affected ($32 million), still face localized challenges. The total damage of $14,906 million underscores the extensive physical destruction to infrastructure, housing, and public assets, which will require substantial reconstruction efforts.

[29]United Nations Office for the Coordination of Humanitarian Affairs 2022, *Pakistan 2022 Floods Response Plan: Interim Report (September-November 2022)* https://www.unocha.org/publications/report/pakistan/pakistan-2022-floods-response-plan-interim-report-sep-nov-2022-issued-09-dec-2022.

Figure 1: Damage in Million (US$)

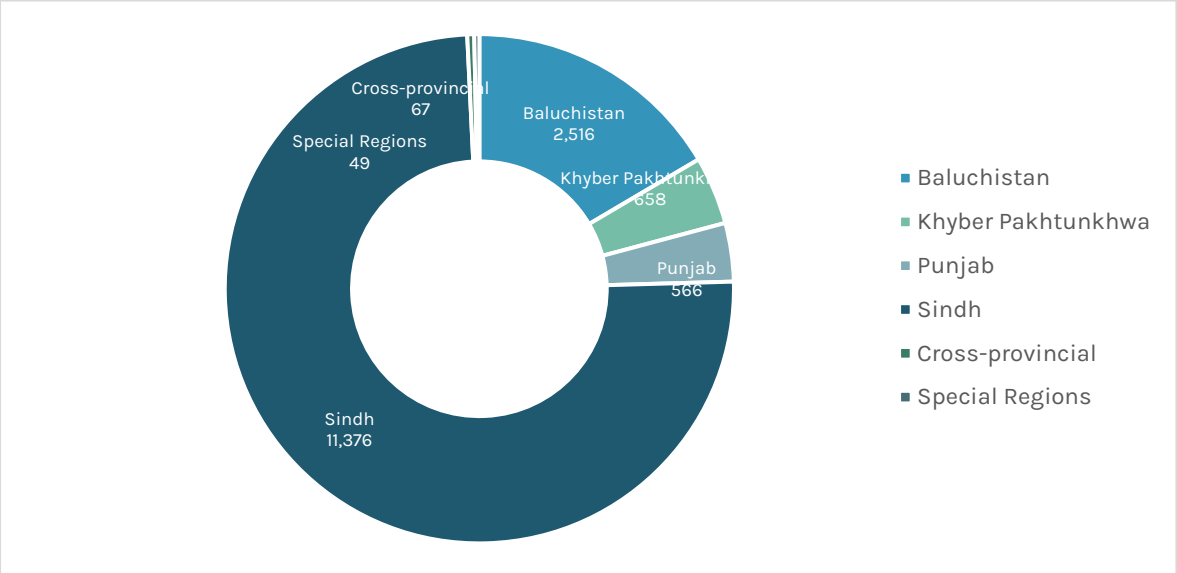


Source: Source: https://www.pc.gov.pk/uploads/downloads/PDNA-2022.pdf/

COUNTRY-WIDE ANALYSIS OF LOSS

Economic losses, which include decline in economic activity and productivity, are highest in Sindh at $11,376 million, reflecting its role as an economic hub with significant agricultural and industrial output. Balochistan also experiences substantial losses at $2,516 million, due to disruptions in mining and agriculture. Khyber Pakhtunkhwa and the Punjab report $658 million and $566 million losses respectively. The Punjab, however, has relatively lower losses due to better disaster management and resilience. Cross-provincial losses are minimal at $67 million, which suggests that inter-regional economic linkages are less affected. Special regions report negligible losses ($49 million), but the grand total of $15,233 million highlights the severe impact on Pakistan's overall economic output, particularly in key sectors like agriculture, manufacturing, and services.

Figure 2: Loss in Million (US$)

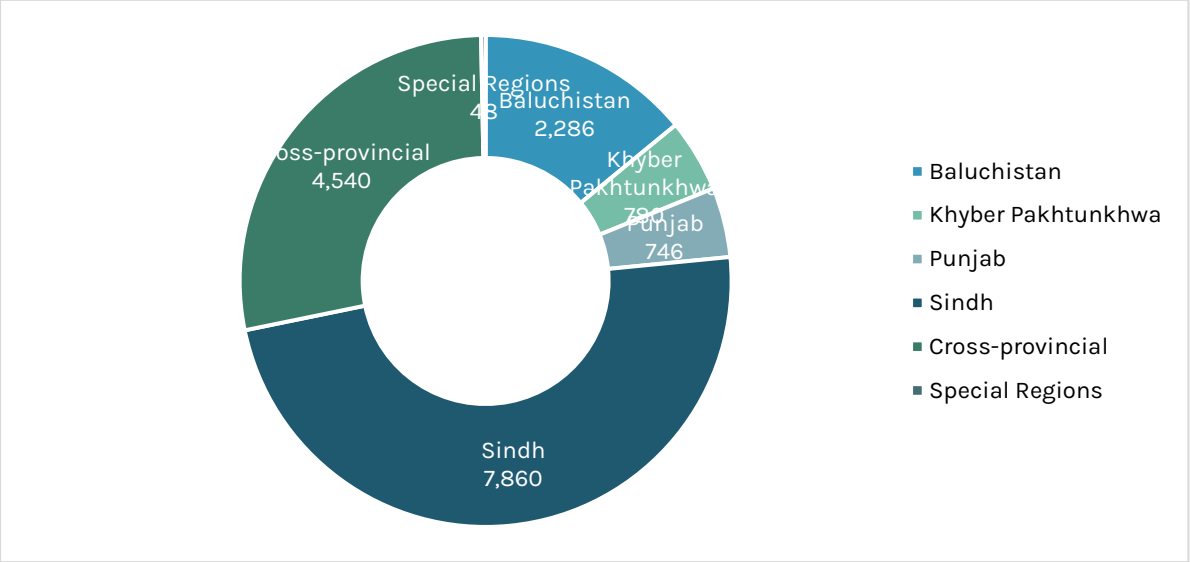


Source: https://www.pc.gov.pk/uploads/downloads/PDNA-2022.pdf/

COUNTRY-WIDE NEEDS ANALYSIS

The financial needs for recovery and reconstruction are substantial, totaling $16,261 million. Sindh requires the largest allocation of $7,860 million, reflecting the scale of damage and its economic importance. Balochistan's needs are significant at $2,286 million, driven by its underdeveloped infrastructure and limited resources. The Punjab and Khyber Pakhtunkhwa require $746 million and $780 million respectively with needs focused on rebuilding infrastructure and restoring livelihoods. Cross-provincial needs are the second highest at $4,540 million, indicating the necessity for coordinated efforts to address shared challenges like transportation and communication networks. Special regions have minimal needs ($48 million), but the overall figure emphasizes the critical requirement for targeted investments in disaster resilience, infrastructure rehabilitation, and social support systems to ensure sustainable recovery.

Figure 3: Needs in Million (US$)



Source: https://www.pc.gov.pk/uploads/downloads/PDNA-2022.pdf/


CONT

4. ROLE OF FINANCIAL INSTITUTIONS, PRIVATE SECTOR, AND CIVIL SOCIETY IN DISASTER RELIEF

Under the umbrella of corporate social responsibility, the Bank of Punjab, volunteering *Madadgar* project is constructing a permanent shelter earlier in Pono village of Mirpurkhas, Sindh, and now in Rojhan city, Punjab after 2022 floods.[30] These eco-friendly and economical shelters with zero carbon footprint are easily deployable when needed. As the risk of calamity has not yet over, so we need more flexible solutions like this which can be handled with evolving circumstances.

NGOs also play a key role in managing disaster at the initial level and also in the distant future. They operate at the grass roots level with the cooperation and coordination of local government and communities (Hossain 2020). In recent times, we have seen the prominent role of NGOs in the rescue, relief, and restoration of people from flood-affected areas.

Islamic Relief, which works with the status of an NGO under the UN worldwide, provided relief to 0.73 million people, who suffered from the 2022 flood. They provided initial emergency relief of life-saving aid, food, and shelter to 91,550 individuals. The organization intended to prolong its relief by assisting in the reconstruction of 4,600 permanent residences.

Alkhidmat Foundation, a local NGO, was the first to reach the most affected areas and started rescue operation after the flood in the mid-year. It spent about Rs 10 billion on relief goods benefiting more than 2 million people and also facilitating people through 1,270 shelter homes. Many other NGOs like Edhi Foundation, JDC Foundation Pakistan, Akhuwat Foundation, etc. in collaboration with Meezan Bank, and Saylani Welfare Trust are a few names.

From the series of short-term and long-term workable solutions, rescue, relief restoration, and resilience are the identified stages to mitigate the risk of disaster. In this new era of globalization and industrialization, we cannot stop these disasters but manage the risk associated with them. The public-private partnership provides better financing for the progress and implementation of the stages for managing disaster risk. Throughout the preceded disasters, Pakistan has suffered a lot in terms of loss of life and widespread damage. Along with the adversities of disaster, there are opportunities as well. Pakistan has employed its own strategy to cope with disasters, including mitigation & preparedness, response, and recovery[31]coupled with efforts from government organizations, International & national donor agencies, banking sector, and NGOs. Table 3 presents an overview of disaster risk financing.

[30] https://www.brecorder.com/news/40202566/for-flood-affectees-of-rojhan-city-bopmadadgar-launched-with-zero-carbon-shelters

[31] https://restoreyoureconomy.org/main/phases-of-disaster/

Table 3: A brief overview of Disaster Risk Financing

Time	Funds	Funding Sources	Outcomes	Government Policies	International Organizations Support	Implementation
2005 Earthquake	Rs61.45 billion	Earthquake Rehabilitation & Reconstruction Authority	600,000 houses were reconstructed	Work on long-term reconstruction along with immediate relief	-	Implemented through Earthquake Rehabilitation & Reconstruction Authority
2005 Earthquake	$25 Million	UNDP	Provision of transitional & cost-effective shelter	-	Provision of Initial Relief	Work through the Federal Relief Commission channel
2005 Earthquake	$137.5 Million	Asian Development Bank	Posits a positive impact on the affected areas by reducing unemployment, increasing per capita income, literacy rate increase, and access to health services also increased	Asian Development Bank established Pakistan Emergency Funds (PEF) to support the Government for rapid reconstruction	-	Work through the Federal Relief Commission channel
2010 Flood	$1.9 Billion	UN Organizations & other NGOs	Provision of initial relief & later restoration and re-establishment. Its working areas were food, health, shelter, agriculture, water & sanitation, education, and community restoration	To support the government of Pakistan and the National Disaster Management Authority	-	-
2014		State Bank of Pakistan	Revive of agricultural land destroyed and small enterprise	* A recovery-based strategy	-	Implemented through commercial banks

Flood			manufacturing & processing units	*Concessional refinance scheme		
2016 *Flood*	$120 Million	International Development Association	Capacity building and resilience against floods and drought along with technical assistance for hydro-meteorological operations	Sindh resilience project for managing the natural disaster	-	Implementation by Sindh Irrigation department & PDMA, Sindh
2016 *Flood*		Asian Development Bank & Government of Pakistan	Restoration of physical infrastructure damaged after 2010 flood	Support the NDMA for financial preparedness	-	Implementation by NDMA
2008- till date *(Earthquake Flood & Poverty Alleviation)*		Government of Pakistan	Provides one-time financial assistance to the disaster affectees	Social protection programs like Benazir Income Support program(BISP) and Ehsaas programs provides short-term and rapid financing relief in case of calamity	-	Implemented by Government of Pakistan
2021-2022 *(flood, drought & crop diseases)*		German Development Bank (KFW) and World Bank	These insurance programs compensate for the loss and damage due to calamity, distribute the burden of risk and recovery, encourage them to go for riskier and high yield methods and also improve credit accessibility for low-income households	Crop Loan Insurance Scheme (CLIS) and Livestock Insurance Scheme for Borrowing (LISB) for facilitating small farmers	-	Implemented by State Bank of Pakistan in collaboration with the Government of Pakistan

2022 *Flood*	Rs 37.2 Billion	Governmnet of Pakistan	Initial relief effort for the provision of food, shelter and health services to 1.5 million families	Flood Relief Cash Program	-	Cash disburse by the government of Pakistan
2022 *Flood*	$475 Million	Asian Development Bank & Government of Japan	This financial package is intended for the restoration and reconstruction of the flood-affected areas of Balochistan, Sindh, and Khyber Pakhtunkhwa. The primary objective of the loan is the reconstruction of infrastructure that includes approx 30 bridges and 400 km of roads and highways	-	Long-term initiatives for the reconstruction of infrastructure of flood-affected areas, in order to make transit routes and supply lines functional.	Not implemented yet
2022 *Flood*		Bank of Punjab	Eco-friendly with zero carbon footprint and economical shelter	Corporate social responsibility	-	Implementation by Bank of Punjab
2022 *Flood*		Islamic Relief Worldwide	Provided initial emergency relief of life-saving aid, food, and shelter	-	Provision of Initial relief and provide assistance in the rebuilding of permanent shelters	Implementation by Islamic Relief Worldwide
2022 Flood	Rs10 Billion	Alkhidmat Foundation	Initial relief and shelter	-		Implementation by Alkhidmat Foundation

5. ROLE OF GOVERNMENT AND INTERNATIONAL ORGANIZATIONS IN PAKISTAN'S DISASTROUS EVENTS

5.1. NATIONAL INSTITUTIONAL FRAMEWORK FOR DISASTER MANAGEMENT

To deal with this crisis in present times and in the future, an institutional framework has been developed. At the federal level, the National Disaster Management Authority (NDMA) was established. This agency manages disaster through prevention, preparedness, mitigation, response, recovery, reconstruction, and rehabilitation.[32] It has divided these functions into three wings: administration & finance wing, the disaster risk reduction wing, and the operation wing. The administration risk provides financial and administrative support, and the disaster risk reduction wing deals with the pre- and post-DDR plans, policies, and their implementation. Operation wing provides humanitarian assistance and rescue operations with the collaboration of the federal & provincial governments, armed forces, national & international NGOs, and other organizations. While short-term relief efforts are generally effective, the real challenges emerge in implementing long-term solutions, where effectiveness tends to decline (Cheema, Mehmood & Imran 2016). The framework of this institution provides a concrete foundation with a few execution failures due to the lack of policy understanding, inaccurate forecasting of risks & neglect to exploring its root cause, and hesitation to build institutional capacity during relief operations.

In the 2005 earthquake, around 3.5 million people were affected whereas the damage caused by this disaster was $ 5.2 million (NDMA Annual Report 2005).[33] The government created the Federal Relief Commission, which collaborated with the provincial government, NGOs, and other international agencies for rescue and relief operations. The government also launched an Earthquake Rehabilitation & Reconstruction Authority (ERRA) for medium to long-term rehabilitation and reconstruction. Around 600,000 houses were reconstructed through the disbursement of Rs 61.45 billion (ERRA Annual Report 2008-2009).[34]

International organizations also play their role in supporting the government in the seismic earthquake of 2005. During the relief phase, UNDP spent $25 out of the total aid of $37 million, on cost-effective shelter as immediate humanitarian support. Asian Development Bank established Pakistan Emergency Funds (PEF) in November 2005 that financed $137.5 million to support the government for rapid reconstruction. It posits a positive impact on the affected areas by reducing unemployment and increasing per capita income, literacy rate, and access to health services,

In 2010, Pakistan Floods Emergency Relief Plan was introduced for 20 million flood affected people wherein $437 million was allocated in the initial phase of recovery. In order to support the government of Pakistan, and NDMA during this huge-scale disaster, the budget

[32] https://hilal.gov.pk/index.php/detail/brief-history-of-disasters-and-its-management-in--pakistan
[33] Pakistan 2005 Earthquake - Early Recovery Framework With Preliminary Costs of Proposed Interventions
[34] Earthquake Reconstruction and Rehabilitation Authority Government of Pakistan

horizon of the UN organizations and other NGOs was raised to $1.9 billion (United Nations 2010). The outcomes of this initiative include initial relief and later restoration & re-establishment. Its working areas were food, health, shelter, agriculture, water & sanitation, education, and community restoration.

In 2013, NDMA developed a National Disaster Management Plan in cooperation with Japan International Cooperation Agency to enhance the overall capacity of disaster management of government organizations in data sharing from the National Disaster Risk Information System (NDRIS) and to train them how to protect the most vulnerable community after preparedness and responsiveness.

In 2014, a Disaster and Climate Resilience Program was launched that covered 70% of flood protection and 30% of administration, water & sanitation protection. The project was funded by IDA and implemented through government structures. At the federal level, it was implemented by Pakistan Meteorological Department (PMD) & Project Implement Units (PIUs), and at provincial level, by Provincial Disaster Management Authority (PDMA) & Punjab Irrigation Department (PID). The cost of this IDA-funded project was $150 million for the Punjab and Northern Areas. This project focused on strengthening the government's resilience capacity towards climate change and the restoration & protection of infrastructure (World Bank 2015).

Moreover, rehabilitation and precautionary programmes for the agriculture, manufacturing, and transport sectors were also designed by the government in collaboration with international & national organizations.

- According to NDMA, 2.5 million people were affected in the aftermath of the 2014 flood in the Punjab, Gilgit-Baltistan, and Azad Jammu & Kashmir; a long-term solution was designed to compensate the most distressed group. A recovery-based strategy was announced by the State Bank of Pakistan.[35] The aim was to revive the one million acres of agricultural land destroyed during floods and small enterprises manufacturing and processing units (Pakistan Flood 2014). The relief of Rs10 billion concessional refinance scheme included rescheduling and restructuring of loans for one year and borrowing from banks at an 8% markup per annum.[36]
- In 2016, an IDA-funded programme was launched in Sindh. This Sindh Resilience Project cost around $120 million for capacity building and resilience against floods and drought along with technical assistance for hydro-meteorological operations.[37] The World Bank declared progress towards the achievement and overall implementation by Sindh Irrigation Department & PDMA Sindh quite satisfactory in managing the natural disaster.[38]

[35] October 23, 2014 SBP announces relief package for agriculture & SMEs in flood affected areas State Bank of Pakistan has anno
[36] https://www.sbp.org.pk/press/2014/Flood-23-Oct-2014.pdf
[37] Pakistan Disaster Risk Management Program
[38] https://documents1.worldbank.org/curated/en/578431625063287655/pdf/Disclosable-Version-of-the-ISR-Sindh-Resilience-Project-P155350-Sequence-No-10.pdf

- In 2016 to support NDMA for financial preparedness, Asian Development Bank provided a loan of around $200 million. The bank supported the government and NGOs in the implementation of NDMA policies. In the rehabilitation project for the transport sector, $196 million was financed by ADB out of the total loan of $218 million while $21 million was financed by the government. The restoration of physical infrastructure impacted the social and economic recovery which was damaged after the 2010 floods (Asian Development Bank 2016).[39]

In the reconstruction phase at the federal and provincial levels, the annual Public Sector Development Program (PSDP) financed the restoration and reconstruction of public assets.

5.2. ROLE OF MULTILATERAL ORGANIZATIONS IN DISASTER RISK RESILIENCE

In 2020 when Pakistan was undergoing a range of disasters, NDMA under its agenda of disaster risk management signed the Memorandum of Understandings (MoUs) to improve its capacity.

- For urban disaster management initially in Sindh and then all over Pakistan, an MoU was signed between NDMA and Tear Funds Pakistan (*National Disaster Management Authority Annual Report 2020*).
- For research and development, an MoU was signed between NDMA and Pakistan Science Foundation to minimize dependency on essential imported goods if a disaster happened (*National Disaster Management Authority Annual Report 2020*).
- For strengthening institutions, research, awareness, and community welfare, an MoU was signed between NDMA and Islamic Relief Pakistan (*National Disaster Management Authority Annual Report 2020*).

However, social protection programmes like Benazir Income Support Programme (BISP) and Ehsaas Programme provide short-term and rapid financing relief in case of any calamity, i.e. earthquakes, COVID-19, and floods (2014 & 2020). A policy action in Ehsaas Programme namely, Tahafuz, provides one-time financial assistance to the disaster-devastated people. In 2022, the government disbursed Rs 37.2 billion among 1.5 million families under the Flood Relief Cash Programme (Ministry of Planning Development & Special Initiative 2022).[40]

Besides the direct cash transfer programme, insurance (a loss-sharing strategy) is also operational. With the support of the German Development Bank (KfW) and the World Bank, two agricultural insurance programmes (one for crops and another for livestock) have been initiated at the national level. The State Bank of Pakistan, in collaboration with the Government of Pakistan, has started the Crop Loan Insurance Scheme (CLIS) and Livestock Insurance Scheme for Borrowing (LISB) to facilitate small farmers (*Pakistan Economic Survey*, 2022, p.33). These insurance programmes compensate for the loss and damage due to

[39] https://www.adb.org/sites/default/files/project-document/176641/49191-001-rrp.pdf
[40] https://www.pc.gov.pk/uploads/downloads/PDNA-2022.pdf

calamity, distribute the burden of risk and recovery, encourage them to go for riskier and high-yield methods, and improve credit accessibility for low-income households.

Focusing on the humanitarian needs that must be addressed immediately after floods in 2022, the Government of Pakistan, in collaboration with the United Nations, launched the Pakistan Floods Response Programme. A total of $211.7 million[41] was funded by this platform, which is about 45% of the total amount needed.

Recently, ADB has approved a loan of $475 million along with a $3 million technical assistance grant and a $5 million grant from the government of Japan.[42] This financial package is intended for the restoration and reconstruction of the flood-affected areas of Balochistan, Sindh, and Khyber Pakhtunkhwa which were damaged in 2022. The primary objective of the loan is the reconstruction of infrastructure that includes approximately 30 bridges and 400 km of roads and highways.[43] While the "Japan Fund from Prosperous and Resilient Asia and the Pacific" has funded $5 million for the development of the agriculture sector destroyed by flood.

[41] https://fts.unocha.org/appeals/1108/summary
[42] https://www.brecorder.com/news/40213973/flood-relief-adb-approves-554mn-financing-package
[43] https://www.brecorder.com/news/40213973/flood-relief-adb-approves-554mn-financing-package

6. GLOBAL BEST PRACTICES IN DISASTER RISK FINANCING

6.1. PHILIPPINES: NATIONAL DISASTER RISK REDUCTION AND MANAGEMENT FRAMEWORK

Amongst developing countries in Asia and the Pacific, the Philippines case presents the good model with progressive private sector engagement in disaster risk management. For example, the Philippine Business for Social Progress, a business-led non-governmental organization, has a keen interest in disaster risk reduction and management relief assistance under its environment programme. It provides financial support to victims of calamities and facilitates in rehabilitation and response initiatives after a disaster event.

The Philippine Disaster Recovery Foundation launched the first-ever national private sector Emergency Operations Center coordinating and building capacity in disaster prevention, mitigation, preparedness, response, recovery, and rehabilitation activities. It also has a dedicated knowledge and learning resource center (Prelab) promoting the disciplines of resilience building business continuity management, disaster risk reduction, and climate change adaptation.[44]

In 2011, the Philippines introduced National Disaster Risk Reduction and Management Framework (NDRRMF), which includes the design for Philippines' disaster risk management urgencies and institutional preparations. It assists mainstreaming disaster risk reduction urgencies into development planning through a framework defined by the National Economic and Development Authority.

The NDRRMF has unaided funding, enhanced by the Local Disaster Risk Reduction and Management Funds (LDRRMF). Provincial, city, and municipal levels donate to the NDRRMF through local disaster risk reduction management strategies and the lowest of 5 per cent of local government income is reserved for their LDRRMFs.

Furthermore, 70 per cent is kept explicitly for the mitigation fund for the usage of disaster prevention, mitigation, preparedness, response, rehabilitation, and recovery projects as documented in a city's local disaster risk reduction and organization plan and as joint in its annual investment programme.

However, the NDRRMF faces numerous issues. Firstly, the distribution procedure for pre-disaster funding is not clear-cut for recovery funding. Furthermore, the annual allocation goes back to the General Fund, if it is not utilized within two years of timeframe. Ambiguity persists around the level of funding for NDRRMF, which would be eradicated if legal provisions occurred to impose a predetermined amount of budget allocated to the fund as occurs, for example, Mexico's Natural Disaster Prevention Fund or FOPREDEN[45].

[44] : Kellet, J., A. Caravani, and F. Pichon. 2014. Financing Disaster Risk Reduction: Towards a Coherent and Comprehensive Approach. London: ODI.

[45] ADB. 2016. Incentives for Reducing Disaster Risk in Urban Areas. Experiences from Da Nang (Viet Nam), Kathmandu Valley (Nepal), and Naga City (Philippines). Manila.

6.2. R-FONDEN: FINANCIAL CATASTROPHE RISK MODEL OF MINISTRY OF FINANCE AND PUBLIC CREDIT IN MEXICO

Mexico has created a broad financial protection approach trusting on risk retention and transfer mechanisms, involving reserve funds, indemnity-based reinsurance, parametric insurance, and catastrophe bonds. A detailed knowledge of the risks has permitted the Mexican government to effectively access international reinsurance and capital markets to transfer specific risks. A fundamental feature of the programme is R-FONDEN, a probabilistic catastrophe risk assessment platform developed to estimate the government‘s financial exposure. R-FONDEN presents situation based as well as probabilistic analysis at national, state, and sub-state levels for four main risks, i.e. earthquakes, floods, tropical cyclones, and storm surge. It assesses the infrastructure damage in important sectors such as health, education, roads, and low-income housing. R-FONDEN takes as input a comprehensive exposure database involving details of buildings, roads, and other public assets and produces as outputs risk metrics including Annual Expected Loss (AEL) and Probable Maximum Loss (PML). This model is currently utilized by the Ministry of Finance, in sequence with actuarial analysis of historic loss data, to assess the disaster risk exposure on R-FONDEN‘s portfolio and to produce risk transfer methodologies.[46]

6.3. FIJI: FIRST DEVELOPING COUNTRY TO ISSUE GREEN BOND

Fiji comprises the 300 low-lying volcanic islands that are at high threat of cyclones and flooding events. Furthermore, it is estimated that by 2050, nearly 20% of the population will be subjected to dislocation because of climate change. Owing to the effects of Tropical Cyclone Winston in 2016, Fiji encountered economic losses equivalent to one-third of its annual gross domestic product. However, in 2017, Fiji released its first sovereign green bond to support climate change mitigation and adaptation, boosting $50 million with its first tranche oversubscribed by doubling the original sum of money. Fiji was the first developing country to put out a green bond. Its green bond will fund projects with clear environmental and social benefits, rebuilding native trees, incorporating renewable energy investments, building more resilient schools, and supporting the country to meet its commitment to the Paris Agreement[47].

6.4. JAPAN: INTEGRATING DISASTER RISK MANAGEMENT IN PUBLIC–PRIVATE PARTNERSHIPS

In the perspective of disaster risks, public–private partnerships (PPPs) can be appeared in terms of conducive policy and legal frameworks, contracting and disaster risk allocation, procurement, monitoring, and payment mechanisms as well as insurance and reinsurance. The example of Japan presents significant perceptions into all of these with incentive systems in the procurement performing a vital position in advancing disaster risk reduction and improved disaster risk management in PPPs. Firstly, contractually authorizing private operators to take on post-disaster obligations can promote increased awareness of risk reduction measures being included into a project’s planned design and

[46] https://www.oecd.org/gov/risk/G20disasterriskmanagement.pdf

[47] https://www.adb.org/sites/default/files/institutional-document/670596/financing-disaster-risk-reduction-asia-pacific.pdf

performance requirements. Secondly, demanding the insertion of disaster risk management procedures in tender submissions can make available for highlighting plans that would ultimately result in decreased disaster risk of the PPP service. Moving further structural policies suggested for the design; such policies would also incorporate "soft" intrusions that offer for institutional preparations that make disaster preparation, response, and recovery more efficient. Thirdly, the modification of accessibility payments can be utilized to offset the real performance during a disaster event, for example, in periods of structural losses to a service or duration of restoration. Processes like these have been utilized, for example, to PPPs for an airport, astronomical observatory, and at a school meal supply center[48].

6.5. COSTA RICA: APPROACH TO DISASTER RISK MANAGEMENT AND FINANCE

Vulnerable to numerous risks, Costa Rica features a thorough legal structure for disaster risk management, represented by the 2006 formation of the Sistema Nacional de Prevención de Riesgos y. Atención de Emergencias (SNPRAE)[49]. These authorized processes have drawn Costa Rica's attention progressively towards disaster prevention in current years, and with the help of one subsystem of the National Emergency Commission particularly committed and assigned to disaster deterrence and mitigation. Certainly, SNPRAE entails that existing disaster risk is integrated into all state and local budgets and programmes. The SNPRAE has mixed-model financing, combining stand-alone financing with sector ministries providing 03% of their annual surplus to the National Emergency Fund. SNPRAE does not require a committed percentage of budget allocated to "disaster" deterrence. Funding has a tendency to vary largely due to the Fund's dependence on post-disaster finance. While there are evidently recognized roles and duties drawn in legislation, in exercise, these roles are detained by noncentral government actors and on a municipal level the Management Committees tasked with coordinated local disaster risk management often not have the skills or capacity to sufficiently accomplish these hazards[50].

6.6. STRENGTHENING TRANSBOUNDARY FLOOD RISK MANAGEMENT IN THE GREATER MEKONG SUBREGION

The Integrated Disaster Risk Management (IDRM) Fund, administered by the Asian Development Bank (ADB) on behalf of the Government of Canada, provided a grant to support the Government of Vietnam to develop more effective solutions to transboundary flood and drought risk in the country and across the borders. The work included developing flood risk scenarios along with climate change projections. These flood risk scenarios supported decision-making around the type of hydraulic structures built for the Cuu Long delta.

Following this, flood and flow management strategies for cross-border flooding were developed; these included preliminary evaluations of structural and nonstructural management strategies to reduce flood risk. The technical elements informed National Disaster Prevention and Control Plans for 50 communes in Tien Giang and Dong Thap districts, as well as 50 gender-sensitive community-based disaster risk management

[48] World Bank. 2017. Resilient Infrastructure Public–Private Partnerships (PPPs): Contracts and Procurement. The Case of Japan. Washington, DC.
[49] It is a national risk management system
[50] Source: Kellet, J., A. Caravani, and F. Pichon. 2014. Financing Disaster Risk Reduction: Towards a Coherent and Comprehensive Approach. London: ODI.

plans. Additionally, another IDRM grant was provided to ADB's work with corridor towns in the Greater Mekong Subregion, including Vietnam, Cambodia, and the Lao People's Democratic Republic (Lao PDR). It aimed to build capacity to develop resilient infrastructure to accommodate flood risk in key cities along the Mekong river corridor.

The technical support was directed towards three investment loans of $0.03 million for Cambodia, $100 million for Vietnam, and $137 million for the Lao PDR for the provision of following services.

(i) improved drainage and road systems,
(ii) better enhanced wastewater and stormwater systems, as well as solid waste management,
(iii) better flood management via land management practices, urban parks, and recreation spaces,
(iv) riverbank stabilization works, and
(v) community awareness campaigns on environmental sustainability and practices.

Eventually, the IDRM Fund's support advised resilient infrastructure design and subsequent delivery, as well as knowledge sharing amongst experts, communities, and governments around the contributing cities and countries[51].

6.7. STRENGTHENING RESILIENCE BY SUPPORTING WOMEN-LED SOLUTIONS AT GRASS ROOTS LEVEL

The Government of Canada and Asian Development Bank established the Integrated Disaster Risk Reduction Management (IDRM) fund for the advancement of proactive integrated disaster risk region-wise management actions. The fund assisted the Philippines, Indonesia and Vietnam through a project titled: "Closing the Gap: Empowering Women to link Community Resilience Priorities to Decentralized Development." This project intended to assist resilience and decline disaster risk through establishing the capability of women organizations in both rural and urban areas to connect with local authorities on retrieving local development funds to assist community-level disaster risk reduction requirements. Where local governments have specific funds allocated for disaster risk decline, the primary process assisted community-based organizations and women to evaluate disaster risk in a participatory approach. This, in response, encouraged decentralized decision-making to make sure that disaster risk reduction endeavours were designed in view of the local perspective, preventing the drawbacks of inflexible or "one-size fits all" methodologies[52].

[51] ADB. 2018. Integrated Disaster Risk Management Fund – Annual Report. Manila.
[52] ADB. 2017. Integrated Disaster Risk Management Fund – Annual Report. Manila.

7. PUBLIC FINANCE FRAMEWORK FOR DISASTER RISK RESILIENCE

7.1. FISCAL IMPLICATIONS OF DISASTER RISKS

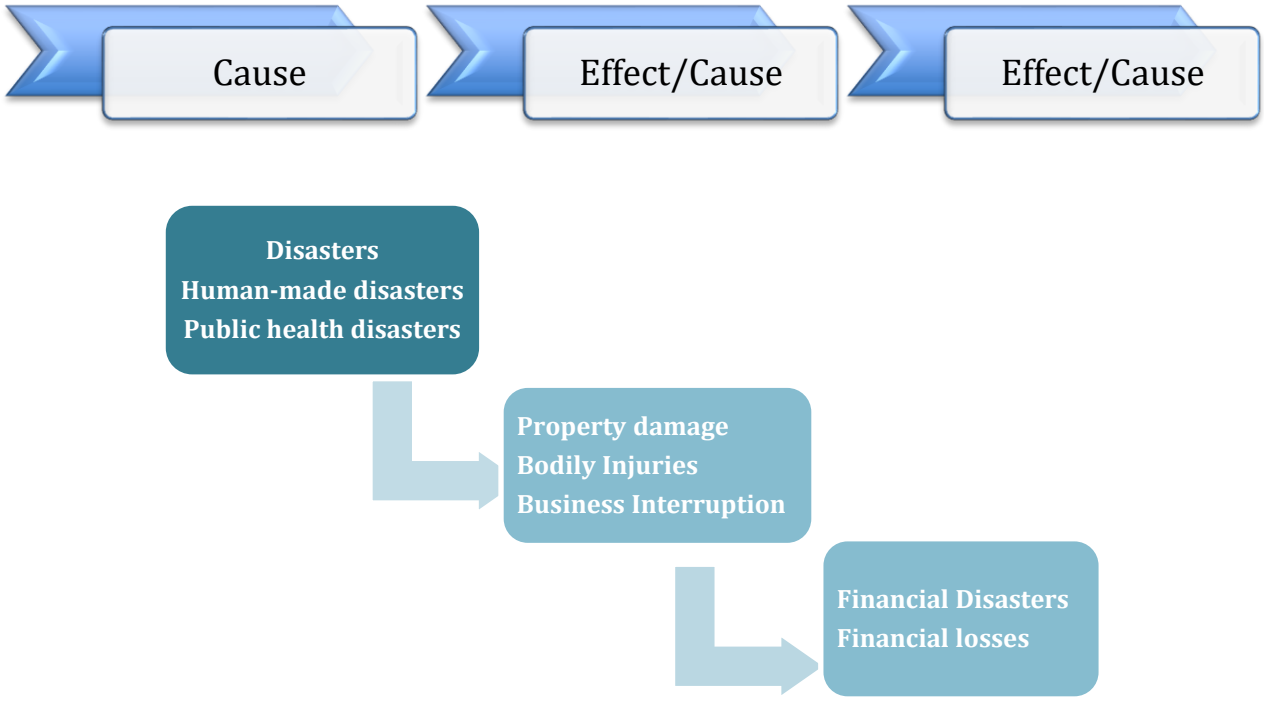
7.1.1. INHERENT FISCAL LIABILITIES OF GOVERNMENTS IN DISASTER MANAGEMENT

The public finance response to a disaster is a main factor of post-disaster relief efforts. These include inherent and assigned responsibilities to meet the financial cost of relief, reconstruction, recovery, and post-event socio-economic support when a disaster and associated crises occur. Recovery costs related to a disaster risk could include a contingent debt of a government and is usually one that is far outside its usual fiscal capacity.

7.1.2. FINANCIAL AND ECONOMIC RIPPLE EFFECTS OF DISASTERS

The financial sufferers such as individuals, businesses, and governments because of primary property harm and bodily damages of a foremost disaster, for instance a typhoon or earthquake can impose financial losses via legal, social, and trade relationships (Figure 1). As disaster arises, the signs of consequence scorching from the disaster can be even more critical and destructive. The immense and intricate ongoing human, financial, and economic costs secondary to the public health disaster formed by the advent and spread of COVID-19 and floods have demonstrated this detail very evidently.

Figure 4: Disaster Risk Transformation Causal Model



Source: Asian Development Bank

7.2. DISASTER RISK FINANCING FRAMEWORK

An inclusive disaster risk finance framework should represent both pre-disaster and post-disaster tools (Table 1). Allocation of reserve funds and the purchase of insurance products are the main instruments for pre-disaster risk preparation. These instruments could also become expensive when the funds stay idle, and insurance policies are not paid out. Some governments chose to shift a part of the burden of disaster finance to the time when a disaster occurs by transferring other government funds and issuing debts to fund post-disaster recovery. The perfect approach is a blend of these finance instruments built on detailed circumstances. Parametric insurance is a significant fragment of this mix to shift a part of government fiscal contingent liability risks to the markets[53].

[53] https://www.adb.org/sites/default/files/publication/781646/eawp-047-enhancing-disaster-risk-financing-prc.pdf/

Table 4: Pre- and Post-Disaster Financing Instruments[54]

Pre-Disaster Financing Instruments		Post-Disaster Financing Instruments	
Contingency budgets	This incorporates a Ministry of Finance budget to assist any disaster related contingencies.	**Budget re-allocations**	Following an unexpected incidence of a disaster, the government manages to turn budgets from less critical expenditures to more critical, post-disaster reconstruction and assistance expenditures
Reserve funds	Disaster-specific reserve funds are utilized to take on the costs of high-frequency, and low-impact disasters. In several countries, they also compensate for disaster risk decline and awareness.	**Tax increase**	Increases in Tax are another approach to finance which enhanced expenditure demands after disasters. Their efficacy relies on several aspects, comprising a national tax base, tax collection capacity and tax compliance
Contingent credit	Some development organizations and private creditors offer a contingent credit line with pre-determined terms and conditions for disaster recovery and reconstruction, versus often costlier post-disaster financing. This would facilitate rapid access to financing in times when post-disaster liquidity tends to be constrained.	**Post-disaster borrowing**	Governments could borrow to finance post-disaster reconstruction and relief costs, conditional to their access to capital markets and their creditworthiness

[54] World Bank and ADB. 2017. Assessing Financial Protection against Disasters: A Guidance Note on Conducting a Disaster Risk Finance Diagnostic. pp. 23 and 24.

Risk transfer solutions	Solutions/Measures consist of products that safeguard the government budget against fiscal shocks occurred due to disasters by shifting the risk to international insurance, reinsurance, and capital markets, for example through sovereign risk pools, or catastrophe bonds parametric or index insurance products.	**Donor existence and support**	Development partners could also deliver vital support to improve the government attempts for disaster relief. Cases include the 2020 and 2021 ADB aid for vaccine procurement and distribution.

8. FINDINGS & POLICY RECOMMENDATIONS

Pakistan is a developing economy with the challenges of rising poverty, unemployment, inflation, the balance of payment crisis, low agricultural yield, and macroeconomic imbalances; disastrous events like floods exacerbate these issues. Its agricultural sector contributes 24% to the country's GDP with the accumulation of 37.4% employment in the total labour force (Economic Survey of Pakistan 2023- 2024). The unprecedented floods destroyed a considerable area of land causing food insecurity, food inflation, and rising unemployment in the agriculture sector. All such problems resulted in the import of essential food items, which contributed to the trade imbalance. Livestock contributes 60.84% of the agriculture sector and in the rural areas where the livelihood of people depends upon their livestock (Economic Survey of Pakistan 2023-2024). After floods, it is difficult to relocate the huge livestock, as people are reluctant to leave their houses without them before and after the calamity. Another issue that is the outcome of disaster is the damaged infrastructure, including houses, schools, hospitals, roads, and bridges. The recent floods have damaged the infrastructure on an extensive scale. In some regions, the roads and bridges were completely devastated, which made the evacuation and initial relief operation challenging. Regarding preparedness, it needs accurate forecasting with minimum errors. There is also a need to work on the factors that trigger these disasters.

Disaster risk is a grave concern for a country with recurring disasters history. This study suggests the following policy recommendations for the departments concerned:

8.1. ENHANCING FINANCIAL ALLOCATION FOR DISASTER RISK MANAGEMENT

Keeping in view the history of disasters in Pakistan, it can be said that almost all the sectors have substantial funding gaps, which is a major cause behind the continued woes of flood-affected people. In most of the circumstances, a dearth of resources has affected the sectors to offer partial support rather than a complete and regular package of assistance. Food security and nutritional needs are the fundamental concerns during and after the floods. Funding gaps indicate that current assistance is insufficient and without additional donor support, this is putting millions of people at risk of falling into crisis and raising their chances of falling into extreme poverty. Breaking of epidemics like malaria and remaining agricultural land brings underwater short-term and long-term consequences for the affected people. To tackle such situation in Pakistan, internal and external support is required. Such a support may be provided by the State Bank of Pakistan, Food and Agriculture Organization (FAO), World Health Organization (WHO) and others.

8.2. STRENGTHENING CLIMATE-RESILIENT AGRICULTURE AND IRRIGATION SYSTEMS

Pakistan already has a low agricultural yield[55] because of using old technology and method of cultivation. Land productivity is affected by catastrophes leading to food insecurity, food inflation, and the import of food items. Research institutions dedicated to the agriculture

[55] https://tribune.com.pk/story/16
16347/pakistans-agriculture-productivity-among-lowest-world

sector like Pakistan National Agricultural Research Council should work on the development of high-yield methods & technologies and their provision on an extensive scale. To encourage people to use efficient technology, the government must allow the duty-free import of modern machinery, equipment, high-yield seeds & fertilizers or reduce the customs duty for flood-affected farmers. Also, there must be some sort of subsidy on domestic seeds and fertilizers. Furthermore, Provincial Irrigation Departments of the Punjab and Sindh must develop a new irrigation plan in accordance with flooding and cleaning of the old canals to release water for cultivation. Stakeholders such as National Insurance Company Limited (NICL), Pakistan Reinsurance Company Limited (PRCL), Securities and Exchange Commission of Pakistan (SECP) and State Life Insurance Corporation (SLIC) support and assistance is required.

8.3. EXPANDING DISASTER RISK FINANCING MECHANISMS THROUGH FINANCIAL INSTITUTIONS

The impact of floods may hinder the liquidity of the microfinance sector in retaining and expanding its loan portfolio. Extensive recommendations to assist the financial sector include but are not limited to: (i) credit guarantee services (ii) targeted regulatory tolerance that is time-guaranteed; (iii) improving targeted refinancing lines for the housing, agriculture, and small and medium enterprises; and (iv) Assisting the microfinance sector via lines of credit and disaster risk insurance.

The State Bank of Pakistan and commercial banks such as Bank of Punjab can initiate loan and insurance schemes to eradicate the disasters impact. For instance, the Crop Insurance Scheme is an effective initiative of the State Bank and implemented by banks and insurance companies. It insures against natural disasters and crop diseases from the period of crop sowing till it is reaped. However, this arrangement shelters the crops such as wheat, rice, sugar cane, maize, and cotton only, which needs some improvement by adding more crops to it. Such as the production of olives has improved immensely but due to wildfire and floods it suffered a lot this year, therefore, there must be some insurance for other agricultural products as well. State Bank of Pakistan can employ the 2014 Concessionary Re-finance Scheme for loan rescheduling and restructuring. Commercial banks can further enhance their support in agriculture and other sectors.

8.4. DEVELOPING SUSTAINABLE AND RESILIENT INFRASTRUCTURE

Post-disaster precautions include building a resilient infrastructure. The City's Development Authority must strictly follow the standards of buildings under construction. Moreover, construction of houses near rivers and canals that are at high risk against heavy monsoons and floods must be banned. The local development authority must restrict the construction of new housing societies falling in the floodwater regions. The material used in the construction of bridges and roads must be resilient enough against flood and the structure must be shockproof. The quality and quantity of the material must be ensured to avoid any loss of life. To devise a sustainable water management system, the government should construct new detention basins and dams in high-flow areas, besides operating the existing dams at their full capacity to manage the excess water. Dams are the major flood protection facility that protects agricultural land, and public & private infrastructure, and also serve as water reservoirs.

8.5. ADDRESSING GENDER-SENSITIVE DISASTER MANAGEMENT CHALLENGES

According to the data available, girls in rural areas are the higher victims of malnutrition as compared to boys. They are to leave their schools when their families experience financial trouble. Women and girls face discrimination and health concerns resulting from insufficient gender-segregated WASH facilities. They are supposed to take care of the elderly or sick family members, or collect water, which intensifies their protection risks. Simultaneously, transgender people are reportedly facing discrimination in getting support and aid. International Organization of Securities Commissions and human rights organizations need to take measures for the betterment of women and girls that are more affected by the 2022 floods in Pakistan.

8.6. INCREASING PUBLIC AWARENESS AND INSTITUTIONAL CAPACITY FOR DISASTER RISK REDUCTION

Lack of awareness and preparedness is also a factor that intensifies the loss and damage due to disasters. Special training and awareness programmes must be organized by NDMA, PDMA, and other community stakeholders to give a better understanding of disaster risk management to the local people. Think tanks, like Sustainable Development Policy Institute (SDPI), can take measures, for instance, by engaging different stakeholders. The institute collaborated with the Bank of Punjab and other international and national NGOs during its 27th Sustainable Development Conference (SDC) held in November 2024 wherein an experts panel on disaster risk financing was organized. Such collaborations are required in future as well for the uninterrupted support during and after the disaster events.

9. CONCLUSION

In Pakistan, Disaster Risk Financing is a serious challenge, which can be addressed by devising comprehensive and multi-dimensional strategies. The study highlights that the country's vulnerability to natural disasters such as earthquakes and floods leaves no choice but strong institutional frameworks, proactive risk management approaches, and innovative financial measures. With the integration of international support, government policies, and private sector engagement, Pakistan can establish resilient systems to mitigate the economic and social impact of these natural disasters. The path ahead demands a holistic approach with prevention, preparedness, and sustainable recovery being the top priority. Effective disaster risk financing is not about the finance required to deal with disasters, but rather it is the nation's capacity to withstand, respond, and recover from the environmental and climate change hazards.

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