Midterm Review of the Implementation of the Sendai Framework for Disaster Risk Reduction 2015-2030

Pakistan

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This Pakistan National Voluntary Report has been prepared to contribute to the UNDRR's Midterm Review of the Implementation of the Sendai Framework for Disaster Risk Reduction 2015-2030 (MTR SF). It based on resources available at the time of literature review. Information was gathered from the public domain, consultations, key informant interviews, from federal and provincial government sources, as well as from subject matter experts. Where possible, a link to the original electronic source is provided in the reference section at the end of the document. While making every attempt to ensure the information is relevant and accurate, the National Disaster Management Authority (NDMA) Pakistan does not guarantee or warrant the accuracy, reliability, completeness, or currency of the information in this Report. All parts of this report may be reproduced, stored in retrieval systems, and transmitted by any means without the written permission of NDMA Pakistan. However, a fair citation policy is recommendation for reproduction in full or parts of the reports.

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EXECUTIVE SUMMARY

Since adoption of post-2015 development frameworks, Pakistan has made significant progress in the implementation of the Sendai Framework for Disaster Risk Reduction 2015-2030 (SFDRR) . Government of Pakistan, through National Disaster Management Authority is in the process of aligning its legislative instruments and policy frameworks on disaster risk reduction to the Sustainable Development Goals, SFDRR and Paris Agreement. This will create an overarching enabling environment for the implementation of these important global frameworks at both national and sub-national level. Pakistan recognizes DRR as a cross-cutting theme and a collective objective, thus other supporting government ministries and agencies at federal and provincial level have also contributed to the four priorities of SFDRR in the country.

Pakistan's considerable achievements in furthering national DRR agenda include initiatives such as a robust DRM institutional mechanism in place comprising of National DMA, Provincial DMAs and District DMAs, existence of a comprehensive DRM/DRR policy framework, increased coordination among all stakeholders, improved weather forecasting & monitoring, and early warning capabilities, establishing a dedicated National Disaster Risk Management Fund for supporting SFDRR implementation and increased awareness on disaster and climate risks in the country.

However, Pakistan faces several challenges in fully accomplishing the goal of a resilient Pakistan. The foremost challenge is country's high vulnerability to climate change, which has increased the probability of the occurrence of extreme weather events in Pakistan, as witnessed last year in the form of extreme heatwave in the first half and unprecedented level of monsoon rainfall causing widespread flooding in the latter half of the last year. The other key challenge with wider impacts is limited financial resources and funding for disaster risk reduction initiatives, which hamper the scale and effectiveness of interventions. Even SFDRR has no clear and concrete commitment to financial aid for developing countries like Pakistan for disaster risk reduction and management. Further, limited institutional capacity and expertise for disaster risk reduction at the local level, and cross-cutting nature of DRR and climate change adaptation requiring wider participation and contribution from all stakeholders are few of the challenges country is facing. These challenges are further exacerbated by the lack of support for DRR policies and programs due to frequent changes in political priorities, especially in the peace time and insufficient focus on understanding of the root causes of disaster risk including poverty, inequality, and environmental degradation that limit effectiveness of disaster risk reduction interventions.

The report presents a collection of recommendations for improving the DRR landscape in the country, while ensuring sustainable and resilient development. The report proposes to the UN General Assembly to establish a dedicated global DRR fund to further the SFDRR implementation at the national level, and increase outreach of UNDRR through additional sub-regional offices. It is also stressed that developed countries should ramp up their efforts for sharing technology and expertise with developing and less developed countries. Also, Pakistan needs to review and re-align its legislative, regulatory and policy frameworks to SFDRR, without delay, and strengthen local level institutions to achieve its goal of a resilient Pakistan.

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I. HIGHLIGHTS AND INTRODUCTION

Globally, the dynamic nature and the associated uncertainty of natural disasters make them a great threat to sustainable and socio-economic development. Usually, middle and low-income countries have to bear the brunt of natural hazards and climatic disasters more than the rich countries do, due to lack of fiscal resources and sustainable infrastructure. The region of South Asia has been termed as the most vulnerable to the natural and human-induced disasters. The geo-dynamic conditions of the region, including higher population growth rate, unplanned urbanization, a complex mesh of poverty, and political and economic instability, render the region vulnerable to multiple disasters. Though the region is enriched with natural resources, and beautiful and complex topography including the world's tallest mountain peaks, glaciers, river systems, forests, deserts, and plains to the warm water ocean, its vulnerability to the disaster risks keeps threatening the lives of its inhabitants and damaging the physical and social capital.

Recently, in the sixth assessment report (AR6) of the Inter-Governmental Panel of the Climate Change (IPCC), South Asia has been termed as the most vulnerable region to climate change-related disasters. Predominantly, the response of the South Asian countries regarding disasters has been reactive rather than proactive. The countries within this region are continuously trying to strengthen the DRM systems based on the lessons learned from disasters within and outside their boundaries. In this connection, the globally adopted frameworks for DRR, the Hyogo Framework for Action (HFA) 2005–2015, and the post-2015 Sendai Framework for Disaster Risk Reduction (SFDRR) 2015–2030 have played a fundamental role in initiating a strategic and systematic policy response system to build the resilience of nations and communities. These frameworks adopted by the United Nations member states emphasized the importance of disaster resilience at different spatial scales (national and sub-national levels) through implementation of inclusive and integrated social, economic, institutional, technological, educational, and political actions and measures. Through the implementation, it will be possible to carry out proactive planning and decision-making to reduce hazard exposure and strengthen resilience through mainstreaming disaster risk reduction and mitigation and resilience into sustainable development and sectoral policies.

Pakistan, like other South Asian countries, is at a high risk of different kinds of natural hazards and human-induced disasters that threaten to affect the lives and livelihood of its citizens which include floods, earthquakes, cyclones, draughts, GLOFs, landslides, heat waves, locust infestation, pandemics, etc. Since its inception, the country has experienced some of the worst disasters of which earthquakes and floods have been very common. However, now due to the global climate crisis, Pakistan's vulnerability to hydro-meteorological disasters has increased two-fold. According to the Global Climate Risk Index Report 2021, Pakistan is ranked number 8th in the context of climate change vulnerability. The losses due to the 2009/10 floods accounted for approximately 5.8% of GDP which affected almost 20 million people. Floods are a recurring disaster in Pakistan and the floods in 2022 are another example of climate calamity which are directly linked to the climate change, as local weather condition

developed in the Southern parts of the country led to heavy rains and floods. The post disaster needs assessment (PDNA) 2022 makes clear the extent of damage and the financing required for ongoing relief and recovery in the medium term. It finds that the floods have cost Pakistan $30.1billion ($14.9 billion in damages and $15.2 billion in losses) and estimates that the country urgently needs $16.3 billion for post-flood rehabilitation and reconstruction support.

Due to global warming, heat waves have also become common disaster in Pakistan. For instance, the heat wave of 2015 resulted in the casualties of more than 2000 people in the province of Sindh. In 2010, due to a landslide in the Gilgit region, a natural dam was established on the Hunza River and a 100 m deep lake was created which submerged more than 20 villages and made many families homeless. This was the Attabad Lake caused by the massive landslide disaster. Furthermore, the incidents of Glacial Lake Outburst Floods (GLOFs) are also becoming common, resulting in the loss of lives and damage to the infrastructure. The most recent one was in Shishper Glacier which resulted in the destruction of the Hassanabad Bridge in Hunza which connected the region with the Karakoram Highway, an important trade route for Pakistan. Similarly, Pakistan had faced major earthquakes due to its active geo-tectonic settings, and the earthquakes of 2005 and 2008 affected 7 million people in the country. Pakistan has also witnessed major earthquakes in 2013 and 2015.

In this context, Pakistan has also transitioned in terms of developing policies, strategies, and plans and is still in the process of mainstreaming disaster risk reduction (DRR) in development planning. After the 2005 Kashmir earthquake, the Government of Pakistan set up the National Disaster Management Authority (NDMA) to handle future disasters and also created Provincial Disaster Management Authorities in all the provinces. Before the 2005 earthquake, the government's emphasis was on emergency response and relief operations. However, post the 2005 earthquake, the government has prioritized proactive policies and legislation about Disaster Risk Management in Pakistan. Additionally, floods in 2009 and 2010 were also one of the main contributors to the formulation of legislation regarding Disaster Risk Reduction in Pakistan. Along with NDMA, there are line departments and technical agencies, such as the Federal Flood Commission, Pakistan Meteorological Department, Space and Upper Atmosphere Research Commission (SUPARCO), and Water and Power Development Authority (WAPDA) etc., who also play their role in supporting implementation of the DRR agenda. Pakistan has endorsed and adopted the global frameworks for DRR at the second and third World Conferences in Kobe and Sendai Japan, namely the Hyogo and Sendai frameworks.

In 2012, Pakistan developed its National Disaster Management Plan (NDMP) 2012 - 22 based on the protocols of the Hyogo Framework of Action (HFA). However, the plan has not been updated formally as per the priority actions defined under the Sendai Framework for Disaster Risk Reduction (SFDRR) which sets the global disaster risk agenda from 2015 to 2030. However, other policies and plans which support the DRR agenda in Pakistan including the Climate Change Policy have been formulated as per the guiding principles of the SFDRR which help mitigate climate-induced disasters. On the eve of the COP26 in Glasgow (2021), Pakistan submitted to the UN its revised NDCs which demonstrated effective

implementation at some levels in the context of disaster management and preparedness. This included many proactive policy approaches adopted by the Ministry of Climate Change which is the line ministry of the NDMA. Pakistan also pledged to work on disaster resilience development and mitigation planning at the COP26 in Glasgow (UNFCCC, 2021).

Analyses of the disaster related policies and experiences reflect existence of short-term approaches to response and relief efforts with a relatively less strategic focus on prevention, preparedness, and capacity building, and almost absence of a formal practical implementation mechanism based on the SFDRR. Although, a short-term early warning system based on the SFDRR strategy has, to some extent, been adopted by the provincial disaster management authorities. Generally, there is a low level of awareness regarding natural hazards and human-induced disasters among the masses in the country. This further affects the coordination mechanism among the institutions involved. With changing dynamics of the climate and environment, new disasters are emerging and becoming recurrent. However, the national disaster profile of the country has not been updated on regular basis to incorporate these emerging risks. Likewise, due to such complexities, the role of the private sector seems to be marred in the context of DRR as their roles have not been defined formally under the national DRR policy and planning. Disaster preparedness and awareness are important specifically in the disaster-prone areas such as the northern mountainous region where earthquakes are recurrent, the plains of Punjab and Balochistan which get affected by floods every other year, and the desert of Sindh where droughts are recurrent. The parts of Sindh are also prone to floods.

The concept of 'Building Back Better' is less understood by the indigenous communities and vulnerable groups who get affected by the disasters. Therefore, the gaps in the institutional framework, coordination mechanism, and lack of awareness and effective and proactive implementation strategies persist in terms of mitigating vulnerabilities and improving livelihoods. Consequently, the country suffers more every year from disasters -recurrent and novel. It is important to review all plans, policies, and strategies by Pakistan which have been developed to mitigate natural hazards and disasters based on the SFDRR to establish the synthesis for the Mid-Term Review progress report of the SFDRR.

II. MTR SFDRR METHODOLOGY AND PROCESS

As a methodological approach, both the primary and secondary level information and data were used to document the implementation, monitoring, and reporting of the SFDRR. The process was started with the desk review of disaster management plans, strategies, policies, and action frameworks implemented in the context of the SFDRR in Pakistan. The review process highlights the success and challenges of the implementation process. The review process mainly focuses on the progress on implementation of four priority areas of the Sendai Framework and challenges being faced in their implementation.

A series of interviews with the sector-specific experts and government officials were conducted to understand the perspectives of the stakeholders in implementing the SFDRR. These interviews were conducted in an open-ended manner (but in response to the structured questions asked relating to various aspects of the implementation processes) allowing respondents to provide the context of the projects/initiatives implemented, the existing policy landscape, and the way forward for SFDRR implementation in a better way. A structured questionnaire was developed based on the guidelines provided in Annex 1 of the "mid-term review Concept Note by the UN Office for Disaster Risk Reduction" and the same was shared with the stakeholders from federal, provincial, and local level departments and the private sector in line with the SFDRR implementation parameters. These interviews were conducted in-person as well as virtual based on the availability of the respondents.

III. RETROSPECTIVE REVIEW

The Sendai Framework aims to achieve several goals, including preventing creation of new risks, reducing the existing stock of risks, and strengthening resilience to disasters. Despite the Government's awareness about the importance of disaster prevention measures, the implementation of the Sendai Framework for Disaster Risk Reduction has been impeded by a significant obstacle: the lack of funds in the country. While various plans have been proposed for reducing disasters, the slow progress in their implementation is due to the unavailability of adequate funding.

Pakistan faces financial constraints as a major challenge to implementing the Sendai Framework on DRR, but there are some achievable policy targets. These include: better awareness at the planning and development level for mega projects based on HVREAs, community-oriented programs, legislation, and inclusive DRR integrated development. Achievements, challenges, and barriers to implementing the Sendai Framework for Disaster Risk Reduction in Pakistan varies depending on the specific context and local conditions. However, Pakistan has successfully completed a project on Glacial Lake Outburst Flooding (GLOF) in two target valleys in Northern Pakistan. The project aimed to enhance the adaptive capacity to prevent climate-induced GLOF disasters in Pakistan. Green Climate Fund has approved the GLOF-II project for Pakistan, which is a continuation of the four-year Reducing Risks and Vulnerabilities from the GLOF in Northern Pakistan (GLOF-I) project. GLOF-I helped vulnerable communities prepare for and mitigate GLOF risks through early warning systems, enhanced infrastructure, and community-based disaster risk management. Under GLOF-II, communities in target valleys are empowered to respond in case of disaster by themselves, and protective measures such as check dams, gabion walls, and cementation of banks also strengthen communities' resilience against GLOF.

The Tsunami Early Warning Centre of the Pakistan Meteorological Department, in collaboration with the UNDP, organized three tsunami evacuation drills in 2021, two of which were conducted in Karachi and one in Gwadar. These drills aimed to enhance community preparedness and awareness by providing practice opportunities. Such drills also foster a sense of community and cooperation that increases resilience.

Here are some of the significant accomplishments, challenges, and obstacles in implementing the Sendai Framework for Disaster Risk Reduction in Pakistan:

Major Achievements

- Pakistan has developed and implemented the National Disaster Risk Reduction Policy. The policy provides a coordinated framework for disaster risk reduction across the country.
- The institutional mechanisms for disaster risk management, including the National Disaster

Management Authority (NDMA) and Provincial Disaster Management Authorities (PDMAs), have been strengthened. This enhancement has enabled these organizations to respond effectively to disasters and manage risks.

- There has been a significant improvement in coordination and collaboration among stakeholders, including national and international partners, civil society organizations, academia, and the private sector.

- Early warning systems have been enhanced, including the installation of weather monitoring equipment, the development of flood early warning systems, and the establishment of a National Drought Monitoring Center.

- National Disaster Risk Management Fund (NDRMF) has been established, with the support of multiple development partners, to support the implementation of National DM Plan and National Flood Protection Plan IV.

- There has been increased investment in disaster risk reduction and resilience-building initiatives. These measures address the impact of climate change and promote ecosystem-based approaches to disaster risk reduction.

Challenges

- Limited financial resources and funding for disaster risk reduction initiatives hamper the scale and effectiveness of interventions.

- Inadequate attention to disaster risk reduction at the local level results in limited community participation and ownership of disaster risk reduction programs and initiatives.

- Limited institutional capacity and expertise for disaster risk reduction, particularly at the local and provincial levels.

- High levels of disaster risks, particularly from recurrent natural hazards such as floods, earthquakes, and droughts, require sustained investments in disaster risk reduction and preparedness measures.

- Environmental issues are cross-cutting and require involvement of various departments like forest, irrigation, and energy and other departments along with the disaster management authorities. Climate change adaptation and sustainable disaster management are cross-cutting issues that require a more comprehensive approach.

Barriers

- Frequent changes in political priorities and lack of continuity in disaster risk reduction policies and programs due to frequent changes in government and leadership.

- Insufficient focus on understanding of the root causes of disaster risk including poverty, inequality, and environmental degradation that limit effectiveness of disaster risk reduction interventions.

- Limited public awareness and understanding of disaster risk reduction and preparedness, which result in low levels of community participation and ownership of disaster risk reduction programs and initiatives.

- The Sendai Framework for Disaster Risk Reduction provides clear targets for sustainable reduction in disaster mortality, affected people, economic losses, and infrastructure damage. However, it has frail linkages to climate change and Sustainable Development Goals (SDG), and vice versa.

- The Sendai Framework for Disaster Risk Reduction has no clear and concrete commitment to financial aid for developing countries like Pakistan for disaster risk reduction and management. It also does not recognize climate change adaptation as a cross-cutting theme for disaster risk reduction and management.

Each member state of the SFDRR is obliged to monitor and report progress against the indicators for measuring the global targets of the Sendai Framework, and disaster risk reduction-related indicators of the Sustainable Development Goals (SDGs), using the online Sendai Framework Monitor. The National Disaster Management Authority (NDMA) has undertaken an inventory of existing SFDRR progress reports and data available, identified required information to be collected, and updated the UNDRR on the progress. The National Disaster Management Authority (NDMA) has actively been engaging with provincial disaster management authorities (PDMAs) regarding SFDRR reporting. SFDRR focal points from relevant stakeholders at the federal and provincial level were also appointed on the NDMA's request. NDMA intends to make this an annual reporting and monitoring exercise, through an already established dedicated SFDRR Cell in it.

A. Progress towards the Outcome and Goal

The 2005 earthquake was an eye-opening realm for Pakistan which highlighted the inadequacies of the government and other relevant stakeholders in effectively managing risks arising from natural disasters. The damages and losses incurred were significant and can be attributed to inadequate preparedness and mitigation measures, including non-compliance with building codes & regulations, and poor construction practices.

Previously, Pakistan has primarily relied on reactive emergency response measures to address

disasters. However, the importance of disaster risk reduction for building social, economic, and environmental resilience has been recognized by the Government of Pakistan. As a result, the Government took steps to establish appropriate policies, legal frameworks, and institutional arrangements to create and strengthen the Disaster Risk Management (DRM) system in the country. The government has also developed strategies, plans, and programs aimed at addressing the needs of the most vulnerable communities and prioritizing disaster risk reduction and management.

Subsequently, the National Disaster Management Ordnance (NDMO) was promulgated in December 2006 which was later promulgated by the Parliament into National Disaster Management Act in 2010. This Act serves as the primary legislation for disaster management in Pakistan, and established the National Disaster Management Commission (NDMC) as the apex decision-making forum for DRM in the country, with the National Disaster Management Authority (NDMA) as its implementing arm. Similar arrangements were also made in the provinces and regions. The formation of the NDMC under the leadership of the Prime Minister, and the NDMA as its executive organ, marked a significant shift in the national approach to disaster risk management. The reorientation of all stakeholders led to improvements in legal & policy frameworks, administrative arrangements, organizational structures, and financial outlays to achieve Disaster Risk Management goals. Collaborative efforts among sectors and stakeholders have resulted in the development of numerous DRR programs and projects aimed at making Pakistan more disaster resilient.

In accordance with the NDM Act 2010, the NDMA developed a long-term National Disaster Risk Reduction (DRR) strategy known as the National DRR Policy and subsequently National Disaster Management Plan (NDMP 2012-22). This plan was approved by the NDMC in February 2013 and includes 41 strategies aimed at achieving resilience in all phases of disasters, including pre, during, and post-disaster. The NDMP aligns with national requirements and international frameworks on DRR and DRM, in vogue at the time of its development. It provides the institutional and technical direction for disaster risk management in Pakistan. The plan outlines cost layouts and interventions for achieving its objectives. The NDMP has 10 interventions, 41 strategies, and 118 projects with an estimated cost of $2040 million for a 10-year of implementation.

At the time of formulation of the NDMP in 2012, Hyogo Framework for Action was in vogue and its 5 priority action areas provided basis for the NDMP. However, after adoption of Sendai Framework in 2015, NDMA undertook an exercise to re-align NDMA as per SFDRR priorities. Figure below represents the outcome of this exercise:

Figure 1: Re-aligning NDMP 2012 – 2022

Hyogo Framework for Action 2005-2015 (HFA)	National Intervention in Disaster Management 2012-2022 (NDMP)	Sendai Framework of Disaster Risk Reduction 2015-30 (SFDRR)
HFA-1: Ensure that disaster risk reduction is a national and a local priority with a strong institutional basis for implementation	Intervention-1: Establish the institutional and legal system for disaster management	Priority 2 Strengthening disaster risk governance to manage disaster risk
	Intervention-2: Prepare disaster management plans at various levels	
HFA-2: Identify, assess and monitor disaster risks and enhance early warning	Intervention-3: Establish a national hazard and vulnerability assessment	Priority 1 Understanding of disaster risk
	Intervention-4: Establish a multi-hazard early warning system	
HFA-3: Use knowledge, innovation and education to build a culture of safety and resilience at all levels	Intervention-5: Promotion of training, education and awareness in relation to disaster management	
	Intervention-6: Strengthen awareness program on disaster risk reduction at local level	
HFA-4: Reduce the underlying risk factors	Intervention-7: Infrastructure development for disaster risk reduction	Priority 3 Investing in disaster risk reduction for resilience
	Intervention-8: Mainstreaming disaster risk reduction into development	
HFA-5: Strengthen disaster preparedness for effective response at all levels	Intervention-9: Establish a national emergency response system	Priority 4 Enhancing disaster preparedness for effective response and to build back better in recovery, rehabilitation and reconstruction
	Intervention-10: Capacity development for post-disaster recovery	
Legend	Partially related <-------	Directly related <-------

Source: National Disaster Management Authority.

In October 2015, the National Disaster Management Authority (NDMA) introduced the Implementation Roadmap 2016-2030, which aimed to accelerate the implementation of the NDMP. The Implementation Roadmap centered around four key domains. The first domain is to conduct a Multi-Hazard Vulnerability Risk Assessment (MHVRA) of the entire country, including cities and rural areas, to create a risk atlas. The second domain is to implement Community-Based Disaster Risk Management (CBDRM) up to the Union Council level, which would include all constituents of the Union Council. The third domain is to focus on capacity-building activities for government officials, such as conducting training needs assessments, emergency response exercises (SIMEX), and other capacity-building initiatives. Finally, the fourth domain aims to raise awareness and advocacy efforts across the entire spectrum of disaster management.

To ensure the effective implementation of the NDMP Implementation Roadmap, a prioritized and phased approach is being adopted. The approach is based on the vulnerability of districts and is divided into three phases, with the number of districts in each phase based on their risk profile and vulnerability. The timeframe and target number of districts for each phase also vary based on priority and needs. This focused and phased approach enables the effective allocation of resources and ensures that the most vulnerable districts receive immediate attention.

Table 1 Phases and target districts for NDMP

Region	No of Districts	MHVRA Completed	No of Districts Phase 1	No of Districts Phase 2	No of Districts Phase 3
Capital Territory	1	-	1	-	-
Punjab	36	5	8	12	16
Sindh	29	7	14	8	7
Baluchistan	32		4	17	11
Khyber Pakhtunkhwa	39	2	8	13	18
Gilgit-Baltistan	10	-	1	7	2
Azad Jammu & Kashmir	10	-	3	2	5
Total	**157**	**14**	**38**	**59**	**59**

Source: NDMA Pakistan

All project initiatives are carried out according to established protocols in order to promote consistency across all parameters, make the most efficient use of available resources, and foster collaboration among various efforts in the realm of disaster management. The National Disaster Management Plan (NDMP) is closely connected with the National Climate Change Policy. Interventions 3, 4, and 7 of the NDMP are coordinated with Policy Measures 4.7a–b, 4.7d-h, 4.7j–o of Intervention 4.7 which focuses on Disaster Preparedness in the National Climate Change Policy.

B. Progress towards reduction of disaster risks impacts of hazards since 2015

Pakistan is one of the countries which are most vulnerable to the impacts of climate change, experiencing regular floods, heatwaves and drought-like conditions. The implementation of the Sendai Framework for Disaster Risk Reduction led to some progress towards reducing vulnerability. An improved short-range Flood Forecasting and Warning System has reduced the death toll in the

2022 floods as compared to the devastating floods of 2010. Since adopting the SFDRR in 2015, one notable achievement has been the development of national and local disaster risk reduction strategies. These strategies aim to increase resilience of communities and to minimize risks and impacts of disasters. Moreover, the country has increased investment in disaster risk reduction programs and initiatives at various levels, from the national to the community level.

Significant progress has been made in reducing disaster risks and minimizing the impacts of hazards on individuals, businesses, communities, and ecosystems in Pakistan. The implementation of the National Flood Protection Plan-IV (NFPP-IV) and National Disaster Management Plan (NDMP) has reduced the financial risks and economic losses throughout the country, thereby enhancing the national GDP, and GNI, and saving human lives. These outcomes can be assessed based on the Value of Statistical Life (VSL) and the Value of Prevented Fatality (VPF).

The Disaster Risk Management (DRM) system in Pakistan has evolved into a three-tiered administration structure consisting of the National Disaster Management Authority (NDMA), Provincial Disaster Management Authority (PDMA), and District Disaster Management Authority (DDMA). This structure has led to improved coordination and resource allocation, while expansion of emergency services across the country and provinces has helped minimize losses, particularly human losses. To mitigate disaster risks, the Provincial Emergency Operations Center issues timely weather advisories, outlooks, and guidelines to all relevant stakeholders for taking precautionary measures during summers and winters. The floods in 2022 demonstrated the effectiveness of this system as compared to the floods in 2010.

The above-mentioned bodies work closely with the National Meteorological and Hydrological Service, which includes the Pakistan Meteorological Department (PMD). The PMD provides various forecasts to DRM, other government bodies, and the public, such as seasonal outlooks and short and medium-term forecasts about hydro-meteorological conditions in the country. These forecasts and specialized bulletins contain information about imminent disaster risks and strengthen DRM's ability to manage such risks. For example, the National Seismic Monitoring Centre in Islamabad, operating under PMD, monitors seismic activity at over 30 locations in Pakistan. This monitoring system not only helps assess earthquake magnitude, location, and depth but also identifies earthquake-prone areas of the country and helps implement building codes for earthquake-resistant structures. Additionally, five Tsunami Early Warning Alarm Systems have been installed in various coastal areas of Pakistan to warn of tsunami generation. PMD also operates a network of manual and automatic weather stations, which provides real-time information on hydrometeorological conditions. Timely information is disseminated to DM authorities in case these conditions suggest a disaster.

Due to the increased frequency of natural disasters and challenges in implementing existing building codes, the NDMA and the Pakistan Engineering Council (PEC) have collaborated to review

and launch the Fire Safety Regulations and Fire Safety Codes in Pakistan. This was achieved through a successful review of the existing Fire Safety Regulations in the country, which culminated in an impressive launch ceremony in February 2017. The NDMA and the PEC are also working towards the enactment of Building Codes through legislation, with plans to classify violations of building codes as criminal offenses. This will be followed by advocacy efforts to promote the implementation of building codes for safer construction practices. The region affected by the 2005 earthquake has already embraced safer construction practices as part of the reconstruction process. The PEC has developed several national codes, including the Building Code of Pakistan (Seismic Provision-2007, updated in 2021), Building Code of Pakistan (Energy Provisions-2011), Pakistan Electric and Telecommunication Safety Code (2014), and National Fire & Life Safety Codes (2017).

Additionally, the government has made it mandatory for all public sector projects to undergo Environmental Impact Assessments. Along with this, a comprehensive DRR compliance checklist has been established as a requirement for the mainstreaming of DRR into development, planning, and public sector projects. This is aimed at ensuring that disaster risk reduction is incorporated into all stages of development planning and implementation.

Additionally, a Gender and Child Cell has been established at the NDMA and the PDMAs to address the needs of women, children and other vulnerable groups, and ensure their protection in pre, during, and post-disaster situations. The Cell is responsible for developing guidelines, Standard Operating Procedures (SOPs), strategies, and capacity-building programs for line departments, humanitarian agencies, Community-Based Organizations (CBOs), and others. The Cells imparted training to children, teachers, communities, and officials on inclusive Disaster Risk Reduction (DRR), Gender-Based Violence in Emergencies (GBViE), School Safety Framework, and Gender mainstreaming in DRR and humanitarian response. Several resources have been developed to guide district disaster management authorities Units (DDMAs), district line departments, NGOs, and CBOs in enhancing their capacity to prepare for unforeseen disasters in pre-disaster situations. This enables them to better plan for disasters and to minimize their impact.

However, there is still a lack of capacity building for disaster and risk analysis in all sectors, particularly in earthquake-prone areas where building codes and construction materials for earthquake resistance are not being followed. There is also a need to recheck building infrastructures in rural and urban areas as well as in fuel, chemical, and other hazardous sectors to ensure that safety measures are in place.

Reducing the impact of natural and man-made hazards is complex and requires sustained efforts over a long period. Challenges to overcome include funding, institutional capacity, and political will. While there has been some progress in reducing disaster risk and impacts in Pakistan since the adoption of the Sendai Framework on DRR, more needs to be done to ensure sustained progress

and resilience. One effective way of reducing disaster risk is through implementation of early warning systems.

C. Progress in Risk Assessment, Information and Understanding

The SFDRR emphasizes the importance of comprehensively understanding and evaluating disaster risk, including vulnerability, exposure of people and assets, hazard characteristics, capacity, and interconnectedness. Some advancements have been made in this area. Prior to implementation of the Sendai Framework on DRR, preparations were already underway to comprehend and prepare for disasters. The NDMA had developed a National Disaster Management Plan, while the Office of Chief Engineering Advisor/Chairman Federal Flood Commission (CEA/CFFC) had executed three National Flood Protection Plans. In view of the 2022 floods, the fourth comprehensive National Flood Protection Plan (NFPP-IV), initially approved in 2017, is currently being updated. Moreover, the updated Flood Protection Sector Project-III (FPSP-III) has been submitted for CDWP approval and includes both structural and non-structural interventions on a national scale to address all probable flooding situations in the country, including flash floods and hill torrents.

Effective understanding and management of disaster and climate risks can contribute to significant reductions in disaster losses. This can be accomplished by enhancing the capacities of institutions (public and non-public) and individuals to understand, absorb, and recover from disasters, thereby reducing mortality risk associated with natural and man-made disasters. Objectives can be accomplished through the implementation of Community-Based Disaster Risk Reduction (CBDRM) and School-Based Disaster Risk Reduction (SBDRM), as well as by training vulnerable communities in Community Emergency Response Training (CERT). These trainings are part of the DRR mitigation and adaptation interventions implemented by humanitarian and development organizations, including the National Disaster Risk Management Fund (NDRMF), Sindh People's Housing for Flood Affectees (SPHF), partner organizations (NGOs and INGOs) of the Pakistan Humanitarian Forum (PHF) and National Humanitarian Network (NHN), and United Nations agencies. In accordance with donor and government regulations and compliances, fund implementing partners ensure adherence to gender action plans, economic viability assessments, sustainability assessments, addressing income inequalities, environmental and social safeguards, application of building codes, and land zoning regulations.

In Balochistan, the highways connecting other provinces or international borders were used to be frequently blocked by snow during winter. To address this, the PDMA Balochistan has procured snowplow machines, and as a result, highways are no longer blocked during emergencies due to the advanced positioning of heavy machinery in anticipation of inclement weather.

The PDMA KP has implemented gender-sensitive contingency plans for monsoon and winter. The agency is working with the provincial Communication & Works (C&W) Department to develop

building codes for safer construction of houses, buildings, and infrastructure in hazard-prone areas for multiple hazards such as earthquakes, floods, landslides, storms/cyclones. The PDMA KP also systematically evaluates and records disaster losses, shares information about their economic, social, health, education, and environmental impacts, and builds the knowledge of government officials, civil society, communities, volunteers, and the private sector through training, sharing experiences, lessons learned, and good practices on disaster risk reduction. Various structure and non-structure measures have been implemented to reduce exposure to hazards and vulnerability, including training, awareness-raising, and structural measures to enhance risk reduction capacity.

Pakistan has invested in early warning systems, disaster preparedness and response, and infrastructure improvements such as flood protection and seismic retrofitting to reduce exposure to hazards. Efforts to reduce vulnerability have included improving access to basic services such as healthcare and education and promoting livelihood diversification. Community-based disaster risk management programs have focused on augmenting the capacity for risk reduction. Disaster risk reduction is considered a priority in Pakistan's national development planning, and efforts are being made to ensure that underlying disaster risks are taken into account in development policies and programs. However, more investment is needed in disaster risk reduction, and better integration of risk reduction into all aspects of development planning and implementation is required.

Policies and strategies such as the National Disaster Management Plan and the National Climate Change Policy have been developed to address disaster risk. However, more work is needed to integrate disaster risk considerations into development planning and ensure that underlying disaster risks are adequately considered.

Pakistan is vulnerable to a range of hydro-meteorological disasters, and the Pakistan Meteorological Department (PMD) is providing forecasts to stakeholders on all levels regarding imminent disasters. For example, every year Monsoon seasonal forecast is issued by PMD to inform the NDMA, PDMAs, and DDMAs regarding the vulnerability of different areas of the country toward torrential rainfall during the upcoming monsoon season and resulting flooding. The monsoon seasonal forecast provides the basis for scenario-based annual contingency planning by NDMA and PDMAs. PMD has adopted the latest weather forecasting techniques, such as numerical weather prediction, which may be helpful in understanding the underlying mechanism of monsoon rainfall and associated floods. Communities living in vulnerable areas are informed well in time before the onset of monsoon rain spells. Similarly, the district administrations / DDMAs issue warnings locally so that people may stay away from vulnerable areas. National Agro Meteorological Centre (NAMC) of the PMD informs the agriculture sector of the country regarding meteorological conditions that can affect agricultural yield. Meteorological bulletins are frequently issued to farmers to timely inform them about the risks of heatwaves, agricultural droughts, the possibility of torrential rainfall/floods/hailstorms/frosts, and pests such as Locust attacks and provides precautionary measures to mitigate risks associated with these environmental conditions to reduce the

vulnerability of the agriculture community.

The Flood Forecasting Division (FFD), Lahore, is the specialized unit of the Pakistan Meteorological Department (PMD), playing a pivotal role in Flood Forecasting & issuance of warnings to concerned quarters. It obtains hydro-meteorological data from various national and international sources, which is then analyzed to produce weather/flood forecasts and warnings. These forecasts / warnings are then disseminated to various Federal/Provincial organizations and electronic/print media through various means and also uploaded on FFD Website. In this way, the 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.

The NDMA has established an efficient early warning system for local communities in close collaboration with the Pakistan Telecommunication Authority (PTA) and the telecommunications industry. The first trial of the SMS-based Early Warning System for communities was conducted in 2014 during floods and generated approximately 6 million SMS messages. The system was further enhanced in 2015, generating approximately 52.2 million messages. Following the earthquake on October 26th, 2015, the NDMA issued 15 Public Service Messages (PSMs) to the residents of Malakand Division and Bajaur Agency via SMS alerts.

To ensure the timely and effective dissemination of early warnings in a cost-effective manner, the National Disaster Management Plan (NDMP) has incorporated a comprehensive and dedicated Multi-Hazard Early Warning System (MHEWS) Plan, with a proposed budget of approximately US$188 million. The plan encompasses upgrading existing radar stations, establishing connections between national and regional disaster management authorities, and other related measures.

To enhance knowledge and understanding of the DRR, disaster related education and awareness initiatives have been started. These initiatives include integration of Disaster Risk Reduction (DRR) components into academic curricula, as recognized by the Higher Education Commission (HEC) at the Bachelor's and Master's levels. The National Disaster Resilience Day has been designated for October 8th, to not only commemorate the victims of Kashmir Earthquake 2005, but also to raise awareness on the need of DRR in the country. The DRR awareness and education materials for children have also been developed. Pakistan is a member of the UNISDR Safer Schools program, and regular awareness advertisements are broadcast on media platforms, along with an active social media presence. National, regional, and international conferences and workshops are regularly held and attended to promote disaster awareness and preparedness.

Local and Indigenous knowledge (LIK) practices are widely implemented in Pakistan for disaster preparedness and mitigation, and Early Warning Systems are installed in vulnerable locations and utilized by Meteorological departments at the provincial and district levels. For instance, traditional methods are used to measure flood levels and information is shared through non-technical means

such as announcements made via mosques and churches. This is particularly useful in disaster-prone areas with no access to electricity or the internet and participation in risk assessments is, therefore, vital for informed decision-making and investment. For instance, in Upper and Lower Chitral, local communities have developed their warning systems and identified safe evacuation places based on their indigenous knowledge. Similarly, some local communities in Muzaffargarh built their own early warning system by placing poles with marked scales at the entrance and middle of the villages to gauge the discharge and flow of water and intensity of floods. Moreover, indigenous communities can retrieve historical data related to past earthquakes, tsunamis, GLOF, and flash flood events. Local knowledge is also helpful in predicting glacier behavior and identifying local terrain, which is useful in planning for risk management, resilience, and adaptation or mitigation strategies.

Deploying Risk Knowledge in Decision Making

Institutional support for disaster risk reduction has been secured by designating the National Hazard and Vulnerability Assessment as a priority area in both the National Disaster Risk Management Plan and the National DRR Policy. To develop an understanding of disaster risk, Pakistan conducted a National Hazard and Risk Assessment in 2011. The purpose of this activity was to develop a nationwide mechanism for risk-sensitive development planning at the three levels of the government i.e., national, provincial, and local levels. In addition, a National Multi-Hazard and Risk Assessment was conducted at a macro level with the aid of technical experts from JICA during the development of the National Disaster Management Plan (NDMP). Realizing the importance of MHVRAs in understanding risks and DRM planning, NDMA constituted a dedicated PMU in 2015, with the aim to develop in-house capacity to conduct MHVRAs. NDMA launched a Policy Guidelines for Conduct of MHVRA in 2016, and a model to conduct MHVRA at district level. NDMA has piloted the said model in thirteen district, so far: five Punjab districts, seven Sindh districts and two Khyber-Pakhtunkhwa districts. MHVRAs in Nowshera, Islamabad and Rawalpindi districts, with the support from UNHABITAT, are underway. MHVRA provides comprehensive location-specific risk information for disaster risk management and development planning to the concerned authorities and agencies. MHVRA Conduct Guidelines ensures uniformity and compatibility in multi-hazard risk assessment methodologies and outcomes.

To provide strategic guidance and coordinate all activities related to vulnerability and risk assessments for guaranteeing uniformity of data, information, and the utilization of standard methodologies, Pakistan has established a National Working Group (NWG) under the NDMA. Furthermore, the NWG on Risk Assessment is tasked with maintaining consistency in the methodologies used for conducting risk assessments, ensuring uniformity in the data formats used during the data collection process, and promoting coordination among all parties involved in the assessments.

For risk-informed decision-making, Pakistan has conducted various sector-specific risk assessments such as Sindh Drought Needs Assessment 2016 to understand drought risks and their impact on livelihoods, food security, nutrition, health, water, and sanitation; the Child Centered Risk Assessment 2017 in Balochistan; and the Multi-dimensional Poverty index as a proxy to measure multidimensional vulnerabilities. Similarly, Aga Khan Development Network (AKDN) carried out local-level pilot risk assessment exercises in cities and districts for the reconstruction of zone areas to estimate seismic risks and related phenomena during the 2005 earthquake reconstruction program. Additionally, a Drought Assessment has been conducted for 14 districts in Balochistan and 9 districts in Sindh. To better understand the most vulnerable populations, a Disaggregated Data Atlas has been developed for the 25 districts with the highest vulnerability, which includes data based on age, gender, and disability. In addition, National Policy Guidelines for Multiple Hazard Vulnerability and Risk Assessments (MHVRAs) have been issued, and the priority of vulnerable districts has been identified in the National Disaster Management Plan (NDMP). The NDMA intends to extend the coverage of the MHVRAs to all districts across the country.

D. Progress in Risk Governance and Management

In Pakistan, the establishment of regional, sub-regional, national, and local DRR strategies and plans has significantly expanded DRR efforts, particularly in provinces and districts. Implementation on these strategies and plans leads to a better understanding of disaster risk, identification of priority actions, and allocation of resources for risk reduction. They serve as concrete and actionable steps toward reducing disaster risks and increasing resilience at all levels.

Since the 2005 earthquake, Pakistan has developed a robust institutional structure for disaster risk management (DRM). In 2006, Pakistan through a National Disaster Management Ordinance (NDMO 2006) constituted an institutional setup for DRM and established authorized bodies at all three levels of governance: National Disaster Management Authority (NDMA) at the National level, Provincial Disaster Management Authority at the Provincial level, and District Disaster Management Authority (DDMA) at the Local level.

In 2012, the National Disaster Management Authority (NDMA) launched the National Disaster Management Plan (NDMP) 2012-2022, to manage the complete spectrum of disaster risk management through DRR policies, strategies, measures, and actions in collaboration with all stakeholders having highlighted priority actions and costs for the ten-year period. The NDMP comprises various plans; for Community Based Disaster Risk Management (CBRDM) a Guidelines for the instructors on CBDRM, Human Resource Development Plan on disaster management, Multi-Hazard Early Warning System Plan, Hazard preparedness plans, contingency plans, and lay down SOPs / roles & responsibilities for all institutions and organizations concerned.

The efforts to understand and plan for disaster risk reduction have been ongoing even before the

Sendai Framework was established. National strategies for disaster risk reduction have been put into action, but funding remains a significant challenge for implementing policies and plans. Despite this, laws and regulations have been created to support the Sendai Framework, including mandates for risk assessment, building codes, and disaster management plans. This legal framework provides guidance for disaster risk reduction efforts at national and local levels, and the government has established dedicated agencies to coordinate disaster risk reduction across different sectors.

The National Disaster Risk Reduction Policy provides a framework for addressing both natural and man-made hazards in Pakistani society, but its implementation has been hindered by funding and capacity limitations. For example, the National Disaster Management Plan of Pakistan and the National Flood Protection Plan-IV have only been partially implemented due to funding constraints. However, progress has been made in devolving disaster risk reduction responsibilities to the provincial and local levels, and there is increasing political momentum for addressing climate change impacts.

Over the years, Pakistan has taken significant steps to mitigate the impacts of natural disasters and to enhance resilience by developing a range of disaster risk reduction (DRR) strategies and plans at the national and local levels. These measures have increased public awareness about DRR, helping to prioritize DRR efforts, enhance investment in DRR activities, and promote more effective resource allocation. At the national and local levels, Pakistan has implemented various DRR strategies and plans, including the National Disaster Management Plan (NDMP), which outlines a comprehensive approach to DRR, the National Climate Change Policy, which addresses climate change impacts, and Provincial Disaster Management Plans, aimed at reducing disaster risks and enhancing resilience at the local level.

Community-Based Disaster Risk Management (CBDRM) programs have also been established to foster greater local community participation in DRR efforts and enhance their resilience to disasters. Other programs include Disaster Risk Financing and Insurance (DRFI), aimed at reducing the financial impacts of disasters and increasing the resilience of vulnerable communities, Climate-Smart Agriculture (CSA) programs, aimed at reducing the impacts of natural disasters on agriculture and food security, and Building and Construction Codes, developed to reduce the vulnerability of buildings to natural disasters, such as earthquakes and cyclones. These measures, among others, demonstrate the Pakistani government's commitment to address risk governance and management through mitigating disaster risks and enhancing resilience, providing a framework for the effective implementation of DRR activities across the country.

Institutional Mechanisms

Pakistan has been proactive in taking measures to enable integrated management of disaster risk across institutions and sectors. One of the key steps taken in this regard is the establishment of the National Disaster Management Authority (NDMA), which is the primary government agency

responsible for disaster risk governance and management in the country. The NDMA coordinates disaster risk reduction activities across different sectors and institutions, ensuring that all stakeholders have a role to play in reducing disaster risks and enhancing community resilience.

In addition, Pakistan has developed and implemented national and local disaster risk reduction strategies to guide disaster risk management efforts in the country. These strategies ensure a coordinated and integrated approach to reducing disaster risks across different sectors. The government has also established mechanisms for inter-agency cooperation and coordination in disaster risk governance and management, including working closely with other government agencies and local authorities.

Pakistan has invested in disaster risk reduction initiatives, including infrastructure development and early warning systems, to enhance the resilience of communities and reduce disaster risks. The government has also conducted awareness-raising campaigns and provided training programs for communities, local authorities, and other stakeholders on disaster risk reduction and management.

These measures demonstrate Pakistan's commitment to promoting integrated disaster risk governance and management across institutions and sectors, ensuring that disaster risk reduction is integrated into development planning and decision-making at all levels. By building partnerships, engaging communities, conducting risk assessments, investing in DRR, and raising awareness, Pakistan is working towards reducing disaster risks and enhancing community resilience.

Pakistan has a well-structured institutional mechanism for the implementation of DRM at all three tiers of governance the federal, provincial, and local levels. The National Disaster Management Commission (NDMC), headed by the Prime Minister, is the main policy-making body at the federal level where NDMA is working as the secretariat of NDMC for coordinating the implementation of the DRM. Since its inception, NDMA has met irregularly for only five times. Similarly, at the provincial level Provincial Disaster Management Commissions (PDMCs), headed by the respective chief ministers, are responsible for decision-making with support from PDMAs as secretariat and operational institutions. At the third tier of governance, District Disaster Management Authorities (DDMA) are responsible for the whole spectrum of DRM in their respective Jurisdictions. They have been authorized to mobilize resources at the local level to deal with disasters and emergencies. The National Disaster Management Plan outlines the roles and responsibilities of various stakeholders in the pre-disaster, disaster, and post-disaster phases. The Emergency Relief Cell has been merged with the National Disaster Management Authority (NDMA). An NDMP Implementation Steering Committee has been formed, with a dedicated unit within the NDMA. Gender and Child Cells have been established at the national and provincial levels.

However, the long intervals between NDMC meetings, overlapping functions of the DRM agencies and lack of clarity over the chain of command remain major challenges in implementing the DRM

policies in Pakistan. The government's approach towards disaster is still responsive rather than preparedness and risk reduction focused, though the existing policy and institutional framework are striving for the holistic DRM approach.

Integration of national and local strategies with the 2030 Agenda for Sustainable Development and the Paris Agreement

Pakistan is taking steps to align its disaster risk reduction (DRR) strategies and plans with the Sustainable Development Goals (SDGs) 2015 and the Paris Agreement 2015 to address the underlying drivers of risk and prioritize risk reduction efforts in vulnerable communities. To this end, the government is working to integrate DRR into national and local plans and actions, thereby ensuring that the DRR remains a priority in the country. Pakistan's Nationally Determined Contributions (NDCs) 2021 include key commitments in the energy, agriculture, forestry, disaster risk reduction, and transport sectors. For instance, Pakistan is committed to increasing the share of renewable energy in its energy mix and promoting climate-smart agriculture practices such as water management, cropping patterns, and soil and water conservation. The country is also committed to increasing forest cover and promoting sustainable forest management practices.

Additionally, Pakistan recognizes the importance of DRR in addressing the impacts of climate change and is committed to enhancing its resilience to natural disasters. The government aims to reduce the exposure and vulnerability of communities to disasters while increasing the preparedness and response capacities of stakeholders. Finally, Pakistan is committed to reducing emissions from the transport sector by promoting energy efficient public transport, encouraging low-carbon vehicles, and improving fuel efficiency.

Pakistan has taken significant steps to integrate disaster risk reduction and management into actions that address climate change, sustainable development, biodiversity, public health risks, and sustainable food systems. Pakistan has mainstreamed disaster risk reduction into national development plans and policies, including the National Climate Change Policy and the National Disaster Management Plan. This helps to ensure that disaster risk reduction is a priority across all sectors of the country. In addition, the government has promoted the adoption of climate-smart agricultural practices to reduce the vulnerability of agricultural communities to climate-related disasters and ensure sustainable food systems. This can help ensure that communities are better equipped to cope with the impacts of climate change.

The government of Pakistan has also integrated disaster risk reduction into its public health planning and response efforts. This helps to better manage health risks in disaster-prone areas and ensures that the health needs of affected communities are met in the aftermath of a disaster. To further reduce the impact of disasters, Pakistan has taken steps to conserve biodiversity and to protect ecosystems. In June 2021 on the eve of the World Environment Day, as a lead country chosen by the United Nation, Pakistan had also launched the 'Decade of Ecosystem Restoration'

initiative of the UNEP. These efforts are important because ecosystems play a critical role in reducing the impacts of disasters and maintaining the resilience of communities. The government has implemented the National Biodiversity Strategy and Action Plan (NBSAP) to achieve these goals.

Pakistan has also implemented several climate change adaptation initiatives to reduce the vulnerability of communities to the impacts of climate-related disasters such as droughts, floods, and sea level rise. This includes the upcoming National Adaptation Plan that will be implemented in the future. Finally, the government of Pakistan has prioritized sustainable development in its national development plans and policies. Sustainable development is essential for reducing the risk of disasters and ensuring long-term resilience. These measures demonstrate the government's commitment to integrating disaster risk governance and management with actions addressing climate change, sustainable development, biodiversity, public health risks, and sustainable food systems.

National / Local Strategies – Targets

Pakistan has developed several key plans related to Disaster Risk Management (DRM), including the National Disaster Response Plan (NDRP) 2019, Annual Monsoon Contingency Plans/Directives 2010, the National Drought Mitigation and Response Plan 2015, and the Nuclear Emergency Management Plan. Other plans in place include the National Plan for Industrial/Technical Disasters, the Cyclone Contingency Plan for Karachi 2008, the National Marine Disaster Contingency Plan 2007 (updated in 2019) and Tsunami Preparedness Guidelines.

Furthermore, the incorporation of a disaster risk reduction (DRR) checklist into the public sector development project proposal format, known as PC-I, is a significant development for the DRR mainstreaming in Pakistan. This inclusion ensures that every new project is reviewed for the DRR compliance before it receives approval from the highest planning forum for implementation. The National Disaster Management Authority (NDMA) has formulated several policies, reports, and frameworks to strengthen DRR in Pakistan, including the Disaster Risk Management Needs Assessment Report 2012, the National Disaster Management Plan (NDMP), NDMA Guidelines for persons affected by natural and manmade disasters, Implementation Framework on the National Policy Guidelines, the Pakistan School Safety Framework, and the MHVRA Implementation Guidelines and Policy.

Principle of Shared Responsibility:

The principle of shared responsibility is a fundamental aspect of disaster risk reduction efforts in Pakistan. This principle emphasizes the importance of collaboration between the central government, local authorities, sectors, and stakeholders in the country to prevent and reduce disaster risk. This collaboration has led to the implementation of integrated measures that cover various sectors such as economic, structural, legal, social, health, cultural, educational,

environmental, technological, political, and institutional aspects to mitigate the impacts of natural hazards. Key policies and plans such as NDMP, National Disaster Response Plan and Host Nation Guidelines outline clear roles and responsibilities of various public sector stakeholders and humanitarian partners for disaster preparedness, DRR and emergency response.

Through the integration of Disaster Risk Management into the Development Process, Pakistan is working towards adopting a holistic DRM approach to development decision-making that considers the impact of natural hazards on public investments, as well as the existing risk profile of communities and assets. This approach aims to increase preparedness for response and recovery, prevent the exacerbation of disaster risk, and ultimately strengthen resilience. To promote this principle, Pakistan has implemented various disaster risk reduction initiatives and programs that involve the collaboration of different sectors and stakeholders. These initiatives and programs aim to reduce hazard exposure and vulnerability to disasters, increase preparedness, and improve the response and recovery capacities of communities and the government. Overall, Pakistan is committed to promoting shared responsibility in disaster risk reduction efforts to ensure a more resilient and safer future for all.

In Pakistan, the shared responsibility principle has been applied through various good practices. One such practice is partnership building, where the government has collaborated with local authorities, civil society organizations, and private sector organizations to promote disaster risk reduction. This approach ensures that all stakeholders have a role to play in reducing disaster risks and enhancing the resilience of communities. Another key practice is community participation, which is crucial for disaster risk reduction in Pakistan. Community-based organizations, including women's groups, have been involved in various activities such as awareness-raising and the development of community-based disaster management plans. This approach empowers communities to take ownership of their disaster risk reduction efforts and ensures that local knowledge is taken into account in decision-making. Additionally, the government of Pakistan has conducted risk assessments at the national and local levels, involving local authorities and communities in the process. This has helped to identify disaster risks and prioritize action for reducing these risks. Capacity building is another important practice that has been promoted, where the government has provided training and capacity-building programs for local authorities and communities to enhance their ability to respond to and manage disasters.

Overall, these good practices highlight the importance of shared responsibility and collaborative approaches to disaster risk reduction in Pakistan. By involving all stakeholders and building their capacity to manage disasters, Pakistan can effectively reduce disaster risks and enhance the resilience of its communities.

Ownership of the Sendai Framework on DRR

Pakistan has made significant progress in incorporating the concept of disaster risk reduction into

its public and private investment decisions. Pakistan has long recognized the importance of understanding disaster risks and investing in disaster risk reduction to protect against disasters such as floods. To this end, the country has already formulated National Flood Protection Plans that take into account the root causes of disaster risks and invest in resilience-building measures. To meet the Sendai Framework's four priorities, fund donors ensure that fund-implementing partners adhere to donors' compliances as agreed via legal agreements. These agreements typically include provisions for economic viability, project sustainability, gender action plans, and environmental and social compliance. In addition to complying with donor requirements, fund-implementing partners in Pakistan must also adhere to national laws and regulations, including the National Disaster Management Plan (NDMP). These partners work as a consortium of public-private partnerships that include NGOs, INGOs, academia, think tanks, the federal government, provincial government, and national organizations. They embed the adoption of the Sendai Framework into decision-making and investment processes as required by legal agreements. Government has established a dedicated National Disaster Risk Management Fund (NDRMF) as a special purpose vehicle for funding implementation of SFDRR and National Flood Protection Plan in the country, while also contributing to SDGs and NDCs.

At the provincial level, the Provincial Disaster Management Authorities encourage the use and strengthening of baselines and periodically assess disaster risks, vulnerability, capacity, exposure, hazard characteristics, and their possible sequential effects on ecosystems. This approach helps to better understand disaster risks and their root causes and to incorporate this understanding into public and private decision-making and investment.

Overall, Pakistan has made significant progress in incorporating the Sendai Framework into its investment decisions, but the degree to which these efforts have been incorporated into laws and regulations as a "due diligence" requirement is not clear. However, the country's ongoing efforts to increase awareness and understanding of disaster risks and reduction in disaster risk are essential for building resilience and preventing the recurrence of disasters.

Policy Landscape

Pakistan's policy environment related to Disaster Risk Reduction (DRR) includes the NDMP 2012 - 2022, the National Disaster Risk Reduction Policy 2013, the National Gender & Child Cell Framework 2013, and the National Policy Guidelines on Vulnerable Groups. Additionally, the NDMA Guidelines for Persons Affected by Natural and Man-made Disasters, Implementation Framework on the National Policy Guidelines, and the Pakistan School Safety Framework are in place and are being piloted. The guidelines for Multiple Hazard Vulnerability and Risk Assessments (MHVRAs) and Multi-Sector Initial Rapid Assessments (MIRA) have also been formulated. Furthermore, a Media and Communication Strategy has been developed to support DRR initiatives.

The National Disaster Risk Reduction (DRR) Policy and a 10-year National Disaster Management

Plan aim to steer disaster risk management's institutional and technical direction. It is also commendable that the NDMA established a Gender and Child Cell in 2010 and formulated the gender and child cell framework, leading to formulation of the National Policy Guidelines on Vulnerable Groups in Disaster (Aged, Disabled, Women, Children). This is a positive step towards ensuring that disaster risk reduction policies and plans consider the needs and vulnerabilities of all members of society, including the most vulnerable groups.

The Sendai Framework for Disaster Risk Reduction has been adopted at the national level in Pakistan, but its implementation at sub-national and local levels varies. In some areas, there are initiatives to involve communities in disaster risk assessments and to promote disaster risk-informed decision-making. For example, in Gilgit-Baltistan and Khyber Pakhtunkhwa, community-based disaster management plans are being developed under the GLOF-II project. Similarly, the Tsunami Early Warning Centre of the PMD is working to establish a Tsunami Hazard Mitigation Committee at the national level in coordination with Indian Ocean Tsunami Warning and Mitigation System (IOTWMS). However, in rural and remote communities, the awareness and implementation of the Sendai Framework may be limited due to resource constraints, capacity issues, lack of awareness and political commitment. More efforts are needed to raise awareness and build capacity among local authorities and communities, and to integrate disaster risk reduction into local development planning and decision-making processes. Overall, there is still room for improvement in promoting the Sendai Framework at the sub-national and local levels in Pakistan.

E. Progress in Investment in Risk Reduction and Resilience

Pakistan is among the ten most climate change-affected countries worldwide, and future climate impacts are expected to further worsen its economic fragility. Pakistan is taking both structural and non-structural measures to build resilience against disasters. Structural measures aim to strengthen buildings, infrastructure, and lifelines to withstand any hazard, while non-structural measures focus on sustaining awareness through land-use planning and disseminating information materials on disaster response.

At the national level, the Emergent Flood Program along with the Provincial Annual Development Plans at the provincial level are implementing structural measures. The NFPP-IV and FPSP-III propose additional measures that will be implemented within the next five years, subject to fund availability. The PMD and WAPDA are undertaking various non-structural measures, such as enhancing the Forecasting and Warning System. Similarly, the NFPP-IV and FPSP-III propose several measures that will be implemented within the next five years, such as the provision of new radars, installation of a Telemetry Network, and establishment of regional Flood Forecasting Centers, subject to the availability of funds.

The PDMA is strengthening the protection of livelihoods and productive assets, including livestock,

working animals, tools, and seeds, through public investment in resilience via the construction of protection work. Additionally, people with life-threatening and chronic diseases, such as COVID-19, have been included in the DRM plans to manage their risks before, during, and after the disaster, including access to life-saving services.

Public investments in disaster resilience in Pakistan Meteorological Department include early warning systems such as weather monitoring through meteorological observatories, automatic weather stations, and radars. Moreover, disaster-resilient infrastructure upgrades and planning, such as the construction/upgradation of bridges, roads, and communication systems, are incorporated into DRR plans. Spatial planning, such as the development of spatial plans that take into account disaster risks, is also included. Emergency preparedness plans, such as Nullah Lai Flooding/GLOF/Tsunami/Marine Protection, also exist with embedded emergency action plans, training in emergency preparedness, and evacuation plans. The non-structural measures in reducing disaster risk and promoting disaster resilience include community-based disaster risk management, implementation of early warning systems, and weather monitoring and alerts to help people prepare for disasters and reduce loss of life, as stated in Paragraph 30 of the Sendai Framework. The PMD is actively engaged in all these activities.

Pakistan has a dedicated fund for Disaster Risk Reduction (DRR), as federal government of Pakistan established the National Disaster Risk Management Fund (NDRMF) under the National Disaster Risk Reduction Policy to ensure funding for risk financing to implement planned DRR interventions. However, at the subnational levels, the PDMAs and the DDMAs have varying financial capacities and usually faced financial constraints for the DRM activities. The Asian Development Bank (ADB) approved a $ 200 million loan in 2016 to support the establishment of NDRMF and at the provincial level, the World Bank provided financial assistance to establish disaster risk financing strategies and the DRM funds. The government received additional contributions of US$3.4 million from the Australian government, US$1.5 million from the Swiss government, and US$25 million from the Pakistani government. The portfolio has grown over the period, with additional financing from the World Bank and other sources. As a result of the NDRMF interventions, over two million people have benefited, and more than 12,000 hectares of agricultural land has been safeguarded. The modernization of the Pakistan Metrological Department (PMD) is currently underway to enhance early warning systems and improve disaster preparedness.

Furthermore, the NDRMF has helped its public and non-public sector partners improve their capacity to meet donor and government obligations. For example, 236 flood protection structures are being built to safeguard the lives and livelihoods of over ten million people across Pakistan, while 45 public sectors buildings, such as schools and health centers, are being seismically retrofitted to improve the learning environment for over 10,000 students, teachers, and support staff. Approximately 8000 committee-nominated volunteers are receiving general and specialized training to improve their capabilities as first responders in the event of disasters and emergencies through 451 community-

based disaster management committees.

Moreover, 23 water conservation structures are being constructed in Balochistan to retain rainwater for domestic and irrigation uses, benefitting roughly 131,000 local residents. Twelve vulnerable landslides are being stabilized using structural measures and bio-engineering techniques to provide connectivity for travelers and tourists both inside and outside of Azad Jammu & Kashmir, and seven localized early warning systems are being installed to provide mountainous communities with advance disaster-related information for timely evacuation and survival. Rescue-1122, the provinces/regions-led emergency service provider, has been given state-of-the-art search and rescue equipment, fire tenders, and ambulances, increasing its service coverage area from 55% to 64% and decreasing its response time from 10 to 7 minutes in Gilgit-Baltistan region. Lastly, approximately 82,100,000 seedlings are being planted in Pakistan to promote biodiversity, mitigate land degradation, and develop nurseries and orchards, grafting 864,000 wild olive plants and 650,000 saffron bulbs to yield economic activity.

Being an agricultural economy, the DRR mainstreaming in this sector is essential to reduce livelihood vulnerability in the agriculture sector. The key challenges faced by the farmers in the semi-arid region of Pakistan are a high cost of adaptation measures and Federal lack of knowledge about hazards. To overcome agriculture sector vulnerabilities, the Flood Commission (FFC) and provincial irrigation departments have carried out structural interventions by investing in irrigation development schemes to expand the irrigated area for local farming and to increase capacity for flood protection. Besides these structural interventions, investment in research and development, capacity building and financing necessary provisions should be prioritized to promote locally viable adaptation options to enhance the resilience of the agriculture sector.

Financing Strategies

Pakistan faces a significant financial challenge resulting from natural disasters, with flooding alone causing an estimated economic impact of between 3 and 4 percent of the Federal Budget annually. On an average, around 3 million people in Pakistan are affected by natural catastrophes each year, which amounts to 1.5 percent of the total population. While funding from donors and multilateral financial institutions has been an important part of the Government's disaster risk management strategy in the past, this approach has significant limitations in terms of efficiency and effectiveness. Therefore, there is an urgent need for a sound disaster risk financing strategy, especially given the country's economic forecast of stringent fiscal policies.

Disaster risk financing can help increase the financial resilience of national and subnational governments, businesses, households, farmers, and the most vulnerable against natural disasters by implementing sustainable and cost-effective financial protection policies and operations. The National Disaster Management Authority (NDMA) of Pakistan has included financial aspects of post-disaster needs in the National Disaster Management Plan 2012-22, as mandated by the NDM Act 2010. While

the fiscal disaster risk analysis is preliminary, it provides the Government with an estimate of their possible public spending needs for post-disaster operations, which is essential for disaster risk financing. Also, the National DRR Policy recommends both a sovereign catastrophe risk financing strategy and the development of a competitive private catastrophe insurance market. The sovereign strategy aims to increase the financial response capacity of the Pakistani government, while the private insurance market targets homeowners, small and medium enterprises, and public entities. This can be achieved through the creation of catastrophe insurance pools and defining top layers of risk. By adopting both approaches, Pakistan can increase its financial resilience against natural disasters and better protect its citizens and economy.

Pakistan is taking steps to integrate disaster risk reduction measures into fiscal instruments and financial regulatory mechanisms. The establishment of the National Disaster Risk Management Fund, incorporation of disaster risk reduction measures into the Public Sector Development Program, and encouragement of corporate social responsibility funds for disaster risk reduction and management initiatives are all positive developments. The Sustainable Finance Framework developed by the State Bank of Pakistan, which includes guidelines for banks and other financial institutions to incorporate environmental and social risks, including disaster risk, into their lending and investment decisions, is also a significant step forward. Furthermore, the development of disaster risk insurance products by the insurance industry in Pakistan can help protect vulnerable populations against losses from natural disasters. However, it is important to continue efforts to ensure that investments are aligned with disaster risk reduction measures and to encourage private investment in disaster risk reduction. Additionally, it is crucial to regularly assess the impact of these measures on disaster risk reduction efforts in Pakistan.

In Pakistan, several initiatives have been undertaken to integrate disaster risk reduction (DRR) considerations and measures into fiscal instruments and financial regulatory mechanisms. These efforts include the establishment of the National Disaster Risk Management Fund (NDRMF) in 2016, which provides a sustainable financing mechanism for DRR and management activities through government and private sector contributions. The Public Sector Development Program (PSDP) is another important tool for investment planning and budgeting in Pakistan. Since the adoption of the Sendai Framework, the PSDP has incorporated the DRR measures and allocated funds for disaster mitigation and prevention projects. Private sector organizations have also established Corporate Social Responsibility (CSR) funds to support DRR activities, with guidance from the State Bank of Pakistan's Sustainable Finance Framework.

The insurance industry in Pakistan has developed disaster risk insurance products, including index-based insurance, to protect vulnerable populations from losses due to natural disasters. The impact of these initiatives is still being evaluated, but they have the potential to significantly enhance the DRR efforts in the country. However, to further encourage private investment in the DRR and ensure alignment with the DRR measures, more efforts are needed. The development of a disaster

risk insurance policy and mechanism in Pakistan may help individuals and communities secure their assets and livelihoods during times of disaster. The government can play a significant role in this regard by introducing and implementing such policies, including through Islamic banking, which avoids interest and is in line with the country's value system. Overall, these initiatives aim to create a more sustainable and resilient Pakistan in the face of disasters.

Pakistan has also developed guidelines for Multi-Hazard Vulnerability and Risk Assessments (MHVRA), which have been carried out in limited districts. Disaster risk financing strategies and instruments are under discussion and implementation, and the Planning Commission of Pakistan is reintroducing the DRR checklist as an essential part of project design. Additionally, a national disaster risk financing strategy is under development, which includes the impacts of climate change, natural disasters, and human-induced disasters on various sectors of society.

To address disaster risk transfer and insurance, risk sharing and retention, and financial protection mechanisms, the NDMA has collaborated with Lead Pakistan and CDKN to create a Disaster Risk Insurance mechanism for vulnerable and marginalized communities. The World Bank provided support for a Fiscal Disaster Risk Assessment, which resulted in the development of an Options Paper. Following the earthquakes in 2005 and floods in 2010/2011, a Citizen Damage Compensation program was established. The NDMA is currently working on the development of a National Disaster Risk Financing Strategy.

The socioeconomic vulnerabilities exacerbate the impact of a disaster on already marginalized communities; therefore, social safety nets play a crucial role in reducing economic disparities to cousin the disaster and economic shocks. In this context, the government of Pakistan has launched social welfare programs for the labor and non-labor working class including the Employees Old-Age Benefits Institution, the Zakat Fund, the Workers Welfare Fund, the Pakistan Bait-ul-Mal, and the Benazir Income Support Programme (BISP). Benazir Income Support Programme (BISP), the flagship social safety programme of the country, also plays a vital role as a cash transfer mechanism during emergency response. After Floods 2022, BISP disbursed over Rs. 67 billion to more than 2.6 million affected household.

To integrate risk-sensitive DRR investment in development planning, government agencies must comply with the official procedure developed by the Planning Commission of Pakistan for disaster risk screening as per the DRR checklist. Disaster risk screening has become mandatory to ensure the mainstreaming of the DRR into public sector development projects before they get approved by the highest planning forum for implementation.

International Cooperation

It is an established fact that Pakistan has been severely impacted by the effects of climate change. The country has suffered considerable losses and damages, with estimates prior to the 2022 floods

amounting to around USD 38 billion, while the Post Disaster Need Assessment (PDNA) Report for the 2022 floods only reveals a loss and damage of $30.14 billion. However, the financial resources provided by the international community for disaster risk reduction in Pakistan have been inadequate and insufficient to address the scale of the problem, particularly when compared to the financial assistance provided in the aftermath of the 2005 earthquake and the 2010 floods. Despite a similar scale of emergency needs, the humanitarian funding response to the Pakistan floods in 2022 represents a fraction of its requirements. The revised humanitarian appeal by Government and UNOCHA for meeting the humanitarian response needs estimated at $816 million, however, UN was not even able to raise half of the financial appeal. So, Pakistan is facing deficit in international financial support, may it be termed donor fatigue or change in priorities of the donors, at a time when it needs it the most in addition to bearing the brunt of climate change and an economic downturn.

On the front of technology transfer, Pakistan Meteorological Department (PMD), in collaboration with the Japan International Cooperation Agency (JICA), has recently completed a project aimed at establishing a specialized medium-range weather forecasting center strengthening the weather forecasting system. This initiative involved upgrading the RADAR system in Islamabad, installing a wind profiler for upper-air observation, providing a weather forecasting and analysis system, and conducting technical training for the operation and maintenance of weather radar, utilization of meteorological products, and related areas. Additionally, meteorological data communication systems have been installed in the SMRFC and five regional meteorological centers of the PMD to facilitate the exchange of weather information. The project is expected to improve weather surveillance capacity, enhance the weather forecasting and warning system, and provide more precise weather observations to enable meteorologists to track and monitor weather patterns more accurately. The upgraded RADAR system is particularly noteworthy as it can detect severe weather conditions such as thunderstorms and tornadoes, enabling early warnings to the public.

Furthermore, the PMD and the United Nations Development Programme (UNDP) jointly undertook a project during 2020-21 aimed at strengthening tsunami and earthquake preparedness in coastal areas of Pakistan. This project involved several activities to enhance the capacity of the Tsunami Early Warning Centre, increase public awareness, and improve institutional participation and community involvement. The project strengthened the seismic monitoring network of the PMD by providing new Broad Band seismometers, IT equipment, earthquake real-time analysis software, and training to operational staff and Tsunami Early Warning Centre, among other measures. Additionally, workshops and community-wide tsunami evacuation drills were conducted to raise awareness about tsunami disasters among different stakeholders and communities at risk.

NDMA with the financial and technical support of Federal Ministry for Economic Cooperation and Development (BMZ) and Federal Institute for Geosciences and Natural Resources (BGR), Germany is implementing a Promoting Resilience against Impacts of Natural Disasters in Pakistan (NADIR)

project. The project aims to improve performance of government disaster risk management through awareness raising in disaster risk authorities for risk-sensitive spatial planning, development of procedures to reduce disaster risks and development & implementation of a risk-sensitive spatial planning guideline.

Besides these examples of international cooperation, an alarming trend is being observed where countries / development partners are investing in Pakistan, however interventions are being carried out through third-party or coalition of INGOs, with minimum or no visibility to Government / NDMA. Such occurrences of international cooperation are omitted from this report due to no official visibility.

F. Progress in Disaster Preparedness, Response and 'Build Back Better'

Pakistan has made progress in improving preparedness for response, recovery, rehabilitation, and reconstruction since the adoption of the Sendai Framework. This includes the development of the National Disaster Response Plan (NDRP) in 2019 which provides guidance and standard operating procedures for emergency response, recovery, rehabilitation, and reconstruction. The NDRP aims to enhance coordination and collaboration among stakeholders in the cycle of disaster management. Pakistan has also improved its Early Warning Systems (EWS) for natural disasters such as floods, heatwaves, and droughts. For example, the Pakistan Meteorological Department has developed a flash flood guidance system that provides advance warning to communities in selected flood-prone areas, enabling authorities to evacuate people and minimize the impact of floods.

The concept of "Build Back Better" has gained traction in Pakistan with a focus on ensuring that reconstruction efforts after disasters result in more resilient and sustainable infrastructure. After the 2010 floods in Pakistan, the government implemented a housing reconstruction program that incorporated earthquake-resistant features and utilized locally available materials. Pakistan has received some support for BBB initiative. The international donors have ensured through legal compliances/agreements the inclusion of women, persons with disability, youth and other marginalized groups while designing and implementing projects covering various geographical locations and thematic areas. The post-Floods 2022 Resilient Recovery, Reconstruction and Rehabilitation Framework (4RF) heavily draws on the concept of build-back-better and resilient recovery to ensure that existing risks are reduced and no new risk is created.

Since 2007, the contingency and response planning process in Pakistan has undergone reforms to adopt a bottom-up approach that involves stakeholders from districts to national level. The National Disaster Management Authority launches an annual campaign to raise awareness and engage in provincial-level consultations with various stakeholders to address the challenges posed by climate change and the resources available. The consultations aim to foster an understanding of

multi-hazard contingency planning, with a specific focus on the Monsoon Contingency Plan. The consultations also identify disaster risk management needs at the provincial and regional levels, which guide the development of focused policy interventions to address key concerns.

National Disaster Management Authority (NDMA) has undertaken several initiatives to strengthen emergency response and preparedness in Pakistan. These initiatives include annual monsoon preparedness and contingency planning in collaboration with all provinces and regions, strengthening emergency response through participation in disaster management field exercises, and enhancing storage capacity for relief items. The NDMA has also organized national post-monsoon review conferences to compile lessons learned and good practices established. Additionally, the National Disaster Management Response Plan (NDRP) was formulated in 2010 and has been revised to align it with the latest priorities and requirements.

At the regional level, the Asian Preparedness Partnership (APP) is a collaborative initiative established by six Asian countries, namely Cambodia, Myanmar, Nepal, Pakistan, Philippines, and Sri Lanka. The primary objective of the partnership is to enhance the preparedness and emergency response capacities of the participating countries in Asia. Through joint efforts, the APP aims to strengthen the region's ability to respond to emergencies, particularly those related to natural hazards.

At the country level, Pakistan Resilience Partnership (PRP) was established In February 2018 by the National Disaster Management Authority (NDMA) with the assistance of the Asian Disaster Preparedness Center (ADPC) and the National Humanitarian Network (NHN). The partnership aims to strengthen Pakistan's emergency response capacity by bringing together representatives from the government, local humanitarian organizations, the private sector, academia, and the media.

To improve coordination and effectiveness in emergency response, PRP members have signed an agreement to enhance their partnership through knowledge sharing, training, and networking opportunities. The partnership's National Steering Committee (NSC), initially consisting of members from the NDMA, NHN, Federation of Pakistan Chamber of Commerce & Industries, Higher Education Commission, and Press Information Department, will work to enhance the capacities of all stakeholders involved. The number of representatives in the NSC is expected to increase over time.

To strengthen emergency response and coordinating mechanisms for disaster/crises management, Pakistan has developed the National Disaster Response Plan (NDRP) 2019 which is an updated version of NDRP 2010, the Host National Support Guidelines for Foreign Assistance to Pakistan During Disaster 2018, and National Monsoon Contingency Response Directive(s) which has been updated through annual monsoon/summer contingency planning exercise and issued annually before monsoon period to present an outlook of the monsoon situation for the upcoming year. The

Directive visualizes monsoon contingencies and provides response guidelines to phased actions for all three tires of governance including the NDMA, the PDMAs, and the DDMAs, and other concerned agencies for hydro-met hazards including cyclones, flashfloods, GLOFs, landslides, and avalanches.

Recognizing the specific needs of the marginalized segments of society especially women and children, during humanitarian response, emergency management, and the DRR actions a Gender and Child Cell (GCC) was established under the NDMA in 2010. The GCC is an attempt to protect the fundamental rights of women, children, and marginalized segments of society as articulated in the constitution, international conventions, and treaties. The National Policy Guidelines on Vulnerable Groups in Disasters (2014), Minimum Standards for Protective Spaces for Children (2013), and Guidelines for Minimum Standards of Relief in Camp (2017) have been developed to further strengthen emergency response during the emergency.

Pakistan's response to disaster is reactive rather than proactive; therefore, ad-hoc emergency response & recovery management bodies and plans are in place for early recovery and recovery management. The establishment of National Command and Operations Centre (NCOC) for COVID-19 pandemic response and National Flood Response Coordination Centre (NFRCC) during Floods 2022 response are example of such ad-hoc measures. Similarly, the Earthquake Reconstruction & Rehabilitation Authority (ERRA) was set up for the post-Earthquake 2005 recovery. Also, Strategic Early Recovery Action Plan (SERAP), and Flood Relief and Early Recovery Response Plan (PFRERRP) were developed for the Floods2010 recovery.

To determine the socio-economic impact of the 2010, 2011 and 2022 floods to devise recovery strategies, the post-disaster need assessments (PDNAs) have been conducted with support from the Global Facility for Disaster Reduction and Recovery – World Bank (GFDRR), Asian Development Bank, UNDP and other technical agencies. Similarly, for the 2014 flood, NDMA in collaboration with UNDP conducted a recovery need assessment (R&A) to determine an estimated cost for recovery and reconstruction. The guidelines for mainstreaming disaster risk reduction in early recovery from the floods were developed in 2010 as an attempt for building back better. The guidelines cover risk-sensitive recovery across eight sectors including governance, water & sanitation, education, health, agriculture & food security, non-farm livelihoods, housing, and community physical infrastructure.

The National Disaster Management Authority (NDMA) has developed a robust disaster response capability in Pakistan, with the ability to support over 300,000 people nationwide in addition to the respective provincial capabilities. To support this effort, the NDMA has established a countrywide warehouse network with the assistance of the World Food Programme (WFP). This network includes seven strategic humanitarian response facilities and 51 Flo-spans, each equipped with a standardized inventory of emergency relief goods and a backup generator. These warehouses are essential for upscaling preparedness levels and ensuring effective disaster response by facilitating field coordination and easy access to disaster-prone communities.

In addition to infrastructure, the NDMA has prioritized capacity building through training programs. Since 2010, more than 8,600 officials have been trained through the National Institute of Disaster Management. Furthermore, in 2014 and 2015, the NDMA conducted National Disaster Management Simulation Exercises with support from the WFP. Initially piloted in three districts of Punjab, these exercises were instrumental in enhancing the capacity of different stakeholders to understand and practice various aspects of disaster management, such as early warning planning, coordination, urban relocation, camp management, logistics needs, and damage assessment. Building on this success, a countrywide Disaster Management Simulation Exercise was also organized in 2015. In 2022 and 2023, NDMA conducted national level table top simulation exercises, based on scenario-based multi-hazards simulations, with participations from national and provincial stakeholders, and humanitarian partners. Pakistan is also the participant of biennial Indian Ocean Wave Exercise, a large-scale tsunami exercise to test standard operating procedures, communication links between stake holders, communities' tsunami preparedness and evacuation procedures.

For an effective early warning system, the Pakistan Telecommunication Authority and the cellular companies provided assistance in establishing an effective SMS-based early warning system, which has been instrumental in disseminating alerts to the public for floods, earthquakes (in 2014 and 2015), and heatwaves (in 2016 and 2017). Over 58 million SMS alerts have been sent to the public, and over 30,000 persons have been evacuated through these early warnings. Additionally, Pakistan Radio and Television have been effectively used as part of an information campaign. The National Early Warning System (NEWS) is being developed in consultation with PTA to institutionalize the present SMS-based Alert System. The Comprehensive and Exclusive Multi-Hazard Early Warning System (MHEWS) Plan has been included in the NDMP. Other early warning systems include a Satellite-based Integrated Flood Alert System (IFAS), the replacement of Automatic Weather Stations (AWS), the establishment of a Specialized Medium Range Forecasting Center (SMRFC), the upgradation of the existing FEWS Computer Model for the Indus River System, and the replacement of Karachi and Islamabad Weather Radars. Additionally, Pakistan has a Tsunami Early Warning System for the Sindh and Baluchistan coasts in addition to the SMS-based Early Warning System for communities.

Pakistan has conducted various disaster preparedness and contingency exercises to enhance its readiness for natural disasters and emergencies. These include national industrial mock exercises held in 2010, 2016, and 2017. The country had also participated in the South Asian Annual Disaster Management Exercise (SAADMEX) hosted in New Delhi, India. Additionally, the government conducted the Government Official Emergency Response Exercise (GOERE) throughout the country in 2016 to test its response capacity. To strengthen its search and rescue capabilities, Pakistan raised and operationalized six modern Urban Search and Rescue Teams. The country has also formulated Host Nation Support Guidelines in 2018 to facilitate international aid agencies during disasters and emergencies.

Pakistan developed a National Action Plan for COVID-19 to enhance the ability of federal, provincial, and regional stakeholders to prevent, detect, and respond to any COVID-19 outbreaks or emerging infectious diseases. This plan also reinforces emergency response measures at the national and community levels. Based on the experiences gained during the pandemic and previous emergency responses, NDMA has proposed amendments to the NDM Act, 2010 to improve disaster management, preparedness and emergency response measures. These amendments will strengthen the institutional structure to handle emergency disasters at all levels.

Marginalized groups, such as women, persons with disabilities, youth, and others, have been involved in disaster risk reduction efforts in Pakistan. For example, the "Women's Resilience Initiative" was launched in 2014 to train women in disaster preparedness, first aid, and search and rescue, enabling them to play a more active role in disaster response efforts. Pakistan has also utilized technology to enhance disaster preparedness and response, including through the development of mobile applications for emergency response as part of the "Smart Pakistan" initiative launched in 2019. However, there is still much work to be done to ensure that these efforts are more inclusive and sustainable, particularly for marginalized groups. Further efforts are needed to involve these groups in disaster risk reduction efforts and to ensure that their needs and perspectives are incorporated into disaster management plans and policies. The PDMA KP has established a Gender and Child Cell to ensure the empowerment of women and persons with disabilities, youth, and other marginalized groups to publicly lead and promote gender equitable and universally accessible response, recovery, rehabilitation, and reconstruction.

Improving the capacity of individuals involved in disaster management and response through capacity building, training, and post-graduate scholarships can play a significant role in reducing disaster risk in Pakistan. Such efforts can help to develop the human resources required for effective disaster management, as they provide first responders, emergency management personnel, and other key stakeholders with the necessary knowledge and skills to respond adequately to disasters. Training programs can significantly enhance the preparedness and response capabilities of individuals and communities. These programs can include educating the public about disaster risk reduction, providing first aid and search & rescue training, and teaching community members on how to prepare for and respond to disasters.

Post-graduate scholarships can create a pool of highly skilled professionals equipped to address the complex challenges posed by disasters. This can be achieved through funding studies in fields such as emergency management, disaster risk reduction, and climate change adaptation, thereby enhancing the knowledge and expertise required to reduce disaster risk and respond effectively to disasters.

G. Collaboration, Partnership and Cooperation

The development of genuine and durable partnerships between NGOs/INGOs and UN agencies, technical partnerships between public/private institutions and academia, and bilateral and multilateral partnerships have proven effective in enhancing disaster risk reduction efforts. In this regard, the Government of Pakistan provides an enabling platform, while resource gap arrangements are facilitated by the government or donor organizations. The most successful partnership model for project implementation in Pakistan is the PPP model (Private-Public Partnership Model). The model involves all stakeholders, including local, sub-national, national, sub-regional, regional, transboundary, and/or multi-stakeholder, civil society, public-private, south-south, and triangular cooperation, and other combinations. The PPP model maximizes the utilization of expertise from both the public and private sectors. Currently, many projects in Pakistan are running under the PPP model, including the Sindh Peoples Housing for Flood Affectees (SPHF), which is a World Bank funded project.

Since the 2005 earthquake, Pakistan has been collaborating with multi-stakeholders on recovery and reconstruction. The earthquake reconstruction and rehabilitation authority (ERRA) is one of the premier government institutions that have hands-on experience working with local NGOs in seismic resistance, reconstruction, social mobilization, and capacity building of the community through the cascading approach. Under this approach, community-led bodies were formed to implement people-centric housing reconstruction with training provided to the local workers on seismic resistance construction. Various international, national, and local organizations have been actively collaborating with government agencies in providing aid and humanitarian services. Since 2003, Pakistan Humanitarian Forum with support from 63 international aid organizations has been actively addressing the developmental needs of the vulnerable populations in Pakistan. Similarly, National Humanitarian Network (NHN), established in 2010, is a 189-member network of national and local NGOs operating in Pakistan. NHN aims to promote humanitarian values by influencing policies and building capacities to ensure right based humanitarian response.

However, in the context of DRM, the role of NGOs, civil society organizations, and groups has been mostly limited to the distribution of relief packages. Various attempts have been made to enhance coordination and promote joint initiatives with NGOs and INGOs e.g., a disaster risk reduction forum was developed to strengthen the engagement of these stakeholders in developing mitigation and preparedness strategies. However, their level of engagement was not strong enough to advocate for policy change nor trigger responsive acts from the government. The strength of PHF in terms of its members and resources has reduced amid the reported shrinking space for civil society during last few years.

At the regional level, the Regional Consultative Committee on Disaster Management (RCC) was established in 2000 by the Asian Disaster Preparedness Center (ADPC) and is composed of members holding key government positions in the national disaster management systems of countries in the Asia-Pacific region. The RCC serves as a consultative mechanism for promoting regional cooperation

in disaster management, as recognized by the ADPC Charter. Currently, the RCC has 30 members representing 26 countries in the region, including Afghanistan, Bangladesh, Bhutan, Brunei, Cambodia, China, Georgia, India, Indonesia, Iran, Jordan, Kazakhstan, Republic of Korea, Lao PDR, Malaysia, Maldives, Mongolia, Myanmar, Nepal, Pakistan, Papua New Guinea, the Philippines, Sri Lanka, Thailand, Timor-Leste, and Vietnam. Pakistan had the honor of hosting the 13th RCC meeting in Islamabad from 3-5 October 2016. The theme of the meeting was "Operationalizing Global Frameworks for Risk-Resilient Development in Asia," which aimed to explore ways to implement global frameworks and agreements related to disaster risk reduction and sustainable development at the national and regional levels.

The Economic Cooperation Organization (ECO) region is prone to natural hazards that cause continuous human and economic losses. The 9th ECO Summit in 2006 emphasized the importance of regional cooperation on disaster risk management and recommended the consideration of regional programs and projects for early warning, preparedness, and management of natural disasters. The ECO has since organized several events, such as meetings, conferences, workshops, seminars, and symposiums, on disaster risk reduction in collaboration with regional and international organizations. These events aimed to assess disaster risks in the region, identify needs, and define the level of risk to people's lives and livelihoods, as well as the capacity and commitment of the main actors, including regional and local organizations, institutions, and governments. The ECO Ministerial Meetings on Disaster Risk Reduction were held on the sidelines of the Third World Conference on Disaster Risk Reduction in Sendai, Japan, and explored enhanced regional cooperation on disaster risk reduction in post-2015 under the overall Sendai Framework for Disaster Risk Reduction in the ECO Region. It was agreed during these meetings to develop a regional framework for actions, and NDMA was part of the working group that formulated the Regional Framework.

The NDMA attended the Asian Ministerial Conference on Disaster Risk Reduction (AMCDRR) in Ulaanbaatar, Mongolia, from July 3-6, 2018. During the conference, the NDMA presented a documentary on vulnerable groups in the Pakistan School Safety Framework (PSSF) as part of the Safe School event organized by the UNICEF Regional Office. The documentary was played during a competition and presented during discussion sessions on PSSF. NDMA was unable to participate in the latest Asia-Pacific Ministerial Conference on DRR (APMCDRR), due to preoccupation with floods 2022 emergency response.

The Heart of Asia - Istanbul Process is a regional cooperation initiative that places Afghanistan at its center and seeks to engage the "Heart of Asia" countries in sincere and result-oriented collaboration for a peaceful and stable Afghanistan, as well as a secure and prosperous region overall. This process provides a new agenda for regional cooperation, with participating countries agreeing to implement Confidence Building Measures (CBMs), and contribute to greater coherence among various regional processes and organizations, particularly in relation to Afghanistan. As part

of the Istanbul Process, Pakistan plays a leadership role as co-chair of the DM-CBMs along with Kazakhstan. This highlights Pakistan's commitment to regional cooperation and its active participation in the efforts to promote peace and stability in Afghanistan and the wider region leading to resilience building of the region. Pakistan has hosted two “Heart of Asia’ International Conferences related to DM-CBMs in 2014 and 2018.

Memorandums of Understanding

The National Disaster Management Authority (NDMA) has signed several memorandums of understanding (MoUs) with various organizations to strengthen their capacity to respond to emergencies and provide support to vulnerable populations. In January 2017, the NDMA signed n MoU with the United Nations Population Fund (UNFPA) to improve the provision of sexual and reproductive health services in humanitarian settings with a focus on marginalized communities. In August 2017, the NDMA signed a MoU with LEAD Pakistan to promote climate change adaptation and resilience among vulnerable groups through capacity building and research. In September 2017, the NDMA signed a MoU with the Hashoo Foundation to scale up the Pakistan School Safety Framework (PSSF) in Islamabad. In November 2017, the NDMA signed two MoUs, one with Care International Pakistan to address gender issues in emergencies and build resilience in the country and another with the Federal Directorate of Education (FDE) to expand the PSSF to 500 schools in the Islamabad Capital Territory. The NDMA also signed a MoU with the Centre of Excellence in Gender Studies at Quaid-e-Azam University to strengthen government officials' capacity to address gender-based issues in disaster scenarios. In addition, the NDMA signed a MoU with Hope 87' to develop education sector contingency planning guidelines as per the International Network for Education in Emergencies (INEE) standards, and with the British Council to implement the PSSF in 500 schools in the ICT. Finally, the NDMA signed a flagship agreement with Swiss Development Cooperation (SDC) to strengthen the institutional capacity of the National Institute of Disaster Management (NIDM) and the NDMA over a two-year period.

The NDMA successfully collaborated with the UNDP on the ‘Building Disaster Resilience Project’ which involved implementing specific activities in selected project districts to create robust and well-coordinated information management systems. In the four project districts of Kashmore and Ghotki in Sindh Province, and Rajanpur and Muzaffargarh in Punjab, the existing information management systems were assessed to identify critical gaps and additional requirements that needed to be prioritized and implemented. The UNDP provided support to officials, DDMA staff, and community members in the selected districts by providing on-the-job mentoring to improve existing coordination mechanisms and exchange of information.

The NDMA has a strong partnership with the Asian Disaster Preparedness Center (ADPC). An example of this collaboration is their joint hosting of the 13th Regional Consultative Committee (RCC) meeting in Pakistan. Also, NDMA is actively working with ADPC on APP and PRP initiatives.

The ADPC has provided technical assistance to the NDMA in capacity building, training, recovery and rehabilitation. This close working relationship has facilitated the exchange of expertise and knowledge, helping to enhance the NDMA's disaster management capabilities. Similarly, the NDMA has collaborated with the World Food Programme (WFP) in disaster management activities. The WFP provides support to the NDMA in terms of human resources, institutional capacity building, and stakeholder training to enhance disaster management capabilities across the country.

The NDMA held the 6th Regional Technical Group (RTG) meeting in Islamabad on June 22, 2018, in its capacity as the co-lead of the Disaster Management Conference Building Measures under the Heart of Asia Istanbul Process. The NDMA hosted an International Conference on Disaster Management in Islamabad during 20-21 June, 2018. The conference was attended by representatives from several countries including Kyrgyzstan, Iran, Turkey, Sweden, Denmark, Kazakhstan, Afghanistan, Azerbaijan, and China, as well as local partners. The purpose of the conference was to discuss disaster management strategies and share experiences and the best practices. NDMA hosted the Fourth Session of Governing Council of Asia and Pacific Centre for Development of Disaster Information Management (APDIM), where Pakistan was also elected at the annual chair of the APDIM Governing Council. Along with the Governing Council Session, NDMA hosted a 'High-level Expert Consultation on Disaster Information Management', an international dialogue event focusing on sharing experiences and ideas, highlighting the best practices from various countries and identifying opportunities to collaborate to make Asia and Pacific region more resilient.

Cooperation and Collaboration Since 2015

Since the Sendai Framework was adopted, there has been some evolution in the cooperation and collaboration for risk reduction across national mechanisms and institutions in Pakistan, but there are still opportunities for improvement. The National Disaster Management Authority (NDMA) has been working with various stakeholders to develop and implement disaster risk reduction plans, policies, and frameworks in line with the Sendai Framework. For instance, it collaborated with the UNDP to implement the National Disaster Risk Reduction Programme, aimed at enhancing disaster risk governance and strengthening community resilience. Moreover, the Ministry of Climate Change has developed a National Climate Change Policy that aligns with the Sendai Framework's goals of reducing disaster risk and building resilience. This policy outlines measures for climate adaptation and mitigation, disaster risk reduction, and capacity building, among other things. Additionally, the Provincial Disaster Management Authorities (PDMAs) in Pakistan have developed and implemented their own disaster risk reduction plans, policies, and frameworks, which are aligned with the national DRR framework and the Sendai Framework. The Khyber Pakhtunkhwa PDMA, for example, developed a Provincial Disaster Management Plan, aimed at building resilience to disasters through risk reduction, preparedness, and response measures. Similarly, other provinces have also developed or in the process of finalizing respective provincial DRM/DRR plans

and CC plans.

Furthermore, Pakistan has collaborated with international organizations and development partners to implement the Sendai Framework. NDMA, since its inception in 2007, has worked with the World Bank on multiple interventions on DRR, disaster risk financing, capacity building and institutional strengthening. Similarly, JICA has also supported NDMA from the start, through provision of technical expertise and capacity building. The Asian Development Bank has provided technical assistance and financial support to strengthen disaster risk management in Pakistan, including the development of disaster risk reduction plans and strategies. Pakistan has also prepared its Nationally Determined Contributions (NDCs) that are aligned with the country's strategic plan, Vision 2025, and with respective policies/plans and sectoral growth targets set by various Ministries and other Government entities. Additionally, Pakistan has developed numerous frameworks for disaster risk reduction and climate change adaptation since the adoption of the Sendai Framework, such as the Resilient Recovery, Rehabilitation, and Reconstruction Framework (4RF) and the National Digital Health Framework Pakistan 2022-2030.

The COVID-19 pandemic has taught us many lessons about disaster management, and Pakistan's institutions and departments played a vital role in raising public awareness about safety measures. Collaboration, cooperation, and coordination in disaster reduction are crucial, and Pakistan needs to network our strengths and capacities, share available resources, and complement existing expertise to reduce vulnerabilities and prevent and mitigate disasters more effectively. In this regard, the floods in 2022 were a good example of how cooperation and coordination among disaster management institutions and line departments reduced human losses. Overall, progress has been made in collaboration and cooperation across national mechanisms and institutions in Pakistan for risk reduction, but there is still room for improvement to ensure a more effective and integrated approach to disaster risk reduction in the country.

H. Progress in achieving the Targets of the Sendai Framework

The Sendai Framework for Disaster Risk Reduction, adopted in 2015, established seven global targets for reducing disaster risk. Here's what progress has been made in achieving these targets in Pakistan since 2015:

- **Reducing the number of deaths, injuries, and people affected by disasters:** The government of Pakistan has implemented several disaster risk reduction measures, such as early warning systems and evacuation plans, to reduce the number of casualties from natural disasters.

- **Reducing direct economic losses caused by disasters:** The government has implemented measures to reduce economic losses from natural disasters, such as improving infrastructure, building more earthquake-resistant buildings, and strengthening dam

systems.

- **Increasing the number of countries with national and local disaster risk reduction strategies:** Pakistan has developed a National Disaster Management Plan and many local disasters risk reduction strategies, but implementation has been limited in some areas.

In the case of flooding, despite efforts to reduce mortality rates, the number of affected individuals, economic losses, and infrastructure damage in Pakistan have not decreased. This is mainly due to the increasing frequency of extreme hydro-meteorological events caused by climate change, as well as the lack of financial resources to support effective prevention and mitigation measures.

Given the devastating impact of climate change and earthquakes on human life especially in light of the Turkey & Syria Earthquake 2023, it is crucial for countries to conduct global surveys of earthquake fault lines in prone regions, establish building codes that consider the nature of the buildings, and implement effective mitigation and prevention policies based on the Sendai Frameworks.

The efforts to achieving seven global targets of the Sendai Framework face several challenges beyond funding gaps and governance issues, including the quantification and monetization of data. One significant issue is the lack of reporting on the contribution of projects to national GDP, which excludes the efforts of organizations in national interests, humanitarian causes, and economic growth. Additionally, the mortality rate has not been monetized or reported at any level. To address this, fatality risk and quantity can be monetized by calculating the Value of Statistical Life (VSL), Value of Statistical Injury (VSI), and Value of Prevented Fatality (VPF), and reported indirectly and/or directly to achieve the seven global targets of the Sendai Framework.

Economic impact analysis is also not reported in quantitative form, and economic impacts are not monetized for all donor-funded and government-funded projects, leading to an underreporting of their contributions to achieving the seven global targets of the Sendai Framework. While there has been progress in achieving seven global targets, increasing availability & access to multi-hazard early warning systems, disaster risk information & assessments remain a significant challenge, mainly due to financial constraints.

IV. CONTEXTUAL SHIFTS, NEW AND EMERGING ISSUES AND CHALLENGES

A. Context Shifts and New Issues – Retrospective 2015 – 2022

The world is facing a complex set of interconnected challenges, including climate change, ecosystem fragility, disease outbreaks, rapid unplanned urbanization, mass displacement, and geopolitical instability. These challenges are fueled by the interconnectivity of communications, trade, financial systems, and politics, and as a result, shocks, stresses, and crises can reverberate globally. The COVID-19 pandemic has highlighted the systemic, interconnected, and cascading nature of risks, and the importance of the Sendai Framework for Disaster Risk Reduction 2015-2030 in addressing these challenges.

Climate change is driving increased risk across all countries, and unpredictable hazards can have devastating cascading impacts on all sectors, with long-lasting, debilitating socioeconomic and environmental consequences. The COVID-19 pandemic has tested existing risk governance and risk management mechanisms and approaches in Pakistan and around the world, revealing both strengths and weaknesses in these systems. Countries with strong public health systems and well-established risk governance and risk management frameworks were able to quickly mobilize resources and implemented measures to contain spread of the virus. In Pakistan, the existing risk governance and risk management mechanisms and approaches faced several challenges in responding to the COVID-19 pandemic in the first year. The healthcare system was already overburdened, and the country lacked sufficient resources to quickly ramp up its response. Additionally, there were some gaps in the existing risk governance and risk management frameworks, such as a lack of coordination between different levels of government and between the public and private sectors. However, Government realized the severity of the situation and established NCOC, to bridge the gap between federal and provincial governments and a coordinated effort was employed to combat the epidemic. The Sendai Framework emphasizes the importance of strengthening the capacities of communities, organizations, and governments to respond to disasters, which is particularly relevant in the context of the COVID-19 pandemic. In this regard, the NDMA is taking proactive steps toward strengthening the Disaster Risk Reduction (DRR) system in Pakistan. The initiatives that the NDMA is focusing on, such as updating the legal and institutional framework for disaster management, implementing the National Disaster Management Plan, conducting vulnerability risk assessments, and retrofitting infrastructure, are all important in building a more resilient system.

In addition, the NDMA is investing in capacity-building training for government officials and the community, as well as establishing linkages and implementing a state-of-the-art information management system. These efforts can improve coordination and communication during disaster response, which is essential for an effective response. Furthermore, modernizing weather and flood forecasting capabilities, enhancing Urban Search and Rescue (USAR) teams' capacity, and

establishing a specialized National Disaster Response Force can significantly improve the country's preparedness and response capabilities. Additionally, developing guidelines for education in emergencies and implementing the Pakistan School Safety Framework can help protect children's safety and well-being during disasters. Lastly, encouraging innovation in disaster management and raising awareness about the DRR efforts are critical in promoting a culture of safety and resilience in the country. Overall, the NDMA's efforts toward strengthening the DRR system in Pakistan are commendable, and it is hoped that the NDMA will continue to prioritize these initiatives in the future.

In conclusion, it is important for governments and other stakeholders to take into account the interconnected nature of risks and the impact of ecosystem degradation when developing and implementing disaster risk reduction strategies. The Sendai Framework provides a valuable framework for addressing these challenges and building resilience to future pandemics and other types of disasters. Strengthening risk governance and management mechanisms and approaches, improving coordination between different levels of government and sectors, and incorporating sustainable development, biodiversity and ecosystem health into disaster risk reduction strategies are all key components in building resilience and reducing the impact of disasters.

Reshaping the Perspective and Approaches to Risk Reduction

Water has been a major source of dispute between Pakistan and India ever since the partition of British India in 1947, which resulted in the division of the Indus River Basin. India became the upper riparian state with control over the canal headworks that supplied water to large areas that became part of Pakistan. As global warming and climate change continue to have an impact, water insecurity in the basin has worsened, creating transboundary risks for Pakistan. As a lower riparian state, Pakistan is more vulnerable to extreme weather events, particularly riverine floods. The Pakistan Commission for Indus Water (PCIW) is working to enhance information exchange with India, institutionalize cross-border early warning mechanisms, and share hydro-meteorological data with India and Afghanistan. Additionally, efforts are underway to establish early warning systems between Pakistan's Meteorological Department and other relevant departments in the region in accordance with the WMO protocols.

Due to the rising frequency and severity of disaster events, particularly recurring flooding, there is a pressing need for more robust emergency response capabilities and heightened preparedness measures. Additionally, to achieve disaster risk reduction, it is crucial to emphasize the establishment of comprehensive plans that clearly outline the division of roles and responsibilities between multi-tiered DRM structures and relevant agencies at various levels. Revisiting institutional arrangements and mandates for the DRM at all levels is critical to clarify task delegation and the chain of command during emergencies.

Addressing financial difficulties has become another crucial area of concern. The existing budget

system does not provide a direct allocation from the federal level for provincial and district disaster risk reduction (DRR) activities. Furthermore, the PDMAs and DDMAs themselves have encountered significant obstacles in generating funds for the DRR locally, amid numerous competing demands. To address this issue, it is essential to ensure that donor priorities should align with national strategies and donor-funded schemes can allocate resources more effectively, while contributing to implementing national strategies. By doing so, financial resources can be channeled, enabling planning to translate into concrete actions. It is crucial for Pakistan to develop a disaster risk finance strategy to address the substantial financial and fiscal costs that arise from disasters and climate change.

Pakistan has made significant progress in transitioning from a response-centric approach to disaster management to a proactive approach that emphasizes resilience. However, the country faces numerous challenges, including climate change, urbanization, and diversity in topography and demographics, all of which have contributed to an increase in the frequency and severity of disasters. To address these challenges, Pakistan must turn theory into practice, despite capacity and financial constraints. The government is focused on prevention, mitigation, and preparedness measures to enhance the country's resilience to disasters. Pakistan has already strengthened its disaster management system and is taking additional steps in line with international frameworks. By engaging in forward planning and effective implementation, Pakistan can achieve its objectives of reducing vulnerabilities, mitigating negative disaster impacts, and creating a more resilient nation.

B. Emerging Issues and Future Contexts – Prospective (to 2030 and beyond)

In the period to 2030 and beyond, several major changes, emerging issues, and topics of concern will need to be considered in prioritizing, accelerating, and amplifying actions. These include:

- Climate change, one of the biggest drivers of disaster risk, is expected to increase the frequency and intensity of extreme weather events, sea level rise, and changes in disease distribution.

- The loss of biodiversity and degradation of ecosystems can increase the risk of disasters and pandemics, with far-reaching impacts on human health, food security, and economic stability.

- The increasing use of technology and the growth of the digital economy are creating new and complex risks, such as cyberattacks, data breaches, and the failure of critical infrastructure systems.

- Rapid population growth, urbanization, and aging populations are changing the nature of risk, increasing the vulnerability of communities, especially in urban areas.

- Political instability and conflict can increase the risk of disasters and undermine efforts to build resilience.
- The COVID-19 pandemic has highlighted the need for better preparedness and response systems to address pandemics and other health emergencies.
- Economic inequality can increase the vulnerability of communities to disasters and undermine efforts to build resilience.
- Increasing food insecurity and water scarcity, unexpected hydrological events due to climate change, locust attacks leading to food security crises, unprecedented heat waves, and other climate-related disasters pose significant threats.
- Future pandemics of unknown cause and impacts are anticipated, which may cause large-scale social disruption, economic loss, and general hardship, with developing countries like Pakistan facing greater losses.
- Globally, there is a shift towards technology and integrated digital systems, especially after the Covid-19 pandemic, which enhances the data collection and processing, accelerating the activity delivery process.
- Investment in climate change adaptation and disaster risk management initiatives will involve innovative projects involving cross-cutting themes under a single project roof to achieve effective results.

To conclude, the changes and emerging issues mentioned above will have profound effects on disaster risk and necessitate action from governments, organizations, and communities to build resilience and minimize the impact of disasters. The Sendai Framework for Disaster Risk Reduction offers a valuable framework for addressing these challenges and guiding action to decrease risk and enhance resilience. Climate justice has become the rallying cry of our time, and the international community may consider establishing a mechanism for disaster loss compensation, rehabilitation, and reconstruction from a shared fund pool to support developing nations, including Pakistan, in implementing measures against these challenges. International partners' support will be critical to the success of these initiatives.

COVID-19 Pandemic in the Context of the Sendai Framework

In response to the COVID-19 pandemic, Pakistan took measures to contain spread of the virus. This included a lockdown that led to the closure of various establishments such as educational institutions, shopping malls, restaurants, construction sites, and large gatherings. However, such a lockdown can potentially worsen the country's economy, particularly since its undocumented

economy accounts for an estimated 36%. To address the pandemic, the government established the National Command and Operations Center (NCOC) to coordinate and implement policies to control the virus and ensure that essential services continued. The NCOC collaborated with various stakeholders, including the private sector and civil society, to mobilize resources and build the capacity to respond to the pandemic.

One of the significant challenges Pakistan faced was procuring COVID-19 vaccines due to the global shortage. The National Disaster Management Authority (NDMA) established a Vaccine Procurement Cell to oversee the vaccination activities. The NDMA worked with the NCOC to achieve the national vaccination goals and ensured proper procurement and distribution of medical equipment to different regions in the country. The NCOC aimed to vaccinate 70 million eligible individuals initially, which was later increased to 153.6 million when the age group of 12 to 18 years was included. Till May, 2023, more than 304 million doses have been administered in Pakistan.

To assist those who were adversely affected by the pandemic, particularly daily wage earners and people who lost their jobs, the EHSAAS Emergency Cash Programme was implemented. This programme provided financial assistance to over 14 million households across the country, with a one-time cash transfer of PKR 12,000 (approximately $75). The programme was effective in reaching those who needed it the most and was implemented quickly. The government also established quarantine facilities across the country, including in hotels and other public buildings, for those who tested positive for the virus or had been in close contact with someone who had tested positive. The government provided food and other necessities to those in quarantine to ensure they did not face additional hardships.

Trade-offs between Response and Recovery Strategies

Hydro-meteorological hazards are likely to become more frequent and severe, while the country faces increasing water scarcity and growing populations in urban areas that require more resources and services. Pakistan is already losing a significant portion of its GDP and federal funding to disasters, and the Climate Risk Index ranks the country as the eighth most affected by climate change globally. By mid-century, climate change is expected to make 69-89 percent of farmers' households vulnerable. The availability of water will be a critical challenge since Pakistan is already highly water-stressed, and the projected frequency and severity of droughts could seriously threaten the livelihoods of thousands. Most hydrometeorological hazards, including GLOFs, are likely to become more frequent and severe, and climate change may also pose a threat to coastal communities. Approximately 10 percent of the population and 40 percent of all industry reside at or near the Arabian Sea coast, which is increasingly vulnerable to storm surges, cyclones, and rising sea levels. Even a minor sea level rise could jeopardize storm barriers and freshwater resources along the coastal belt, including the Indus Delta plains, where severe climate scenarios could submerge an area of 7,500 km². Furthermore, the increase in flooding and storm intensity could

exacerbate coastal erosion, and the declining natural buffer zones such as mangrove forests are exposing more areas to hydro-meteorological hazards.

Therefore, the availability of the information and baseline data to strengthen the understanding of disaster and climate change impacts should be a priority. The data should be available to all levels of development tiers to mainstream the DRR and climate resilience (CR) in all sectoral development. The lack of financial resources and technical capacities to collect, manage, and analyze disaster risk information and climate change impacts are the major challenges at the lower tiers of governance. Technical competencies in collecting, managing, and analyzing disaster risk information must be extended to the sub-national planners including sectoral planners, town planners, local planning authorities, and data collection and management agencies at the provincial and districts level. A centralized DRR framework may fail to cover a diverse range of disaster and climate change threats because each province and region has its own climatic and topographic characteristics. Therefore, a decentralized DRR framework is essential to achieve the desired results. Completely rolling out the National Disaster Management Plan (2012-22) into action is required to address the specific problems and needs of each locality.

Although Pakistan has improved its DRM structure in terms of scale and quality, a lot of work still needs to be done to improve the work modalities with partners and communities. Mainstreaming people-centric DRR and climate change interventions are required to promote people's participation in disaster preparedness and mitigation, enhancing coping capacities and livelihood diversification, and climate change adaptation among vulnerable populations. The mainstreaming can be achieved by providing necessary resources and knowledge to the communities and building ownership and trust among the diverse population on mutual DRR benefits. On one end, Pakistan is running out of freshwater at an alarming rate and is likely to suffer a shortage of 31 million acre-feet by 2026, on the other end, it has been facing massive frequent floods. Therefore, a huge investment is required to improve the irrigation system and flood mitigation structure. Degradation of the Indus River Basin, due to the poorly managed irrigation system, and other river basins suffering deterioration require long-term rehabilitation strategies and solutions that explore options for managing water resources and ecosystems in a holistic manner.

To overcome the financial challenges and to promote resilient investment in all development projects, Pakistan has established a National Disaster Risk Management Fund. The investment in the DRR is envisaged to achieve a greater scale of operations in the coming years. Pakistan needs to develop a systematic mechanism for tracking medium and long-term benefits, co-benefits and impacts of the DRR investment and policies. A robust monitoring system that feeds the progress into the SFDRR is important to build a strong case of comparative benefits of the DRR investments for sustainable growth aligned with the SDGs.

With the rapid expansion of urban areas and the growth of cities, Pakistan must implement swift

risk-reduction initiatives in urban settings. Among the critical measures to mitigate flood and seismic risks are enforcing existing building codes and enhancing drainage capacity. Additionally, social safety net programs and funds such as the Zakat fund could be utilized further to supplement financial assistance to low-income households and those vulnerable to poverty. In this regard, measures aimed at poverty reduction have become increasingly crucial, given that livelihoods relying on the environment are under growing threat from climate change-related hazards such as flooding and droughts that may seriously jeopardize crop yields and people's well-being, and have significant economic impact for Pakistan.

V. PROSPECTIVE REVIEW AND RECOMMENDATIONS

To enhance the effectiveness of disaster risk management initiatives, it is essential to adopt innovative and cross-cutting approaches that take into account economic, social, gender, and environmental considerations. The application of digital systems in disaster risk management and insurance can also be highly beneficial in improving the efficiency and effectiveness of interventions. Public-private partnerships can be an effective way to manage projects, ensuring their successful implementation while also promoting accountability and transparency.

It is important to design projects based on the needs of the beneficiaries using demand-pulled models that take into account their unique circumstances and priorities. Reporting progress in a quantitative form is also crucial, allowing for data-driven decision-making that takes into account economic impact and other important metrics such as VSL, VPF, EIRR, CBA, and NPV. The nexus approach, which combines short-term and long-term goals, can be highly effective in achieving sustainable outcomes. For example, building flood protection walls and providing seeds to communities to grow agriculture can help support improved livelihoods and income per household, while also protecting them from anticipated disaster losses due to seasonal flooding. By adopting such innovative approaches and cross-cutting initiatives, disaster risk management can be made more effective, sustainable, and responsive to the needs of vulnerable communities.

Measures to build the resilience of people, assets and ecosystems in Pakistan

1. **Early warning systems:** Implementing early warning systems for various types of disasters, such as floods, earthquakes, and cyclones, would help reduce disaster risk and increase the resilience of communities in Pakistan. The systems should be equipped with modern technology, such as satellite imagery, and should be integrated with disaster management plans.

2. **Disaster risk reduction (DRR) education and training:** Increasing awareness and knowledge about DRR among communities, particularly in high-risk areas, would help build resilience and reduce disaster risk. This can be done through community-based programs and training sessions for local leaders, health workers, and schools.

3. **Improved infrastructure:** Investing in the improvement and strengthening of critical infrastructure and basic services, such as roads, bridges, water and sanitation systems, and health facilities, would increase resilience and reduce the impacts of disasters.

4. **Diversified food systems:** Improving the resilience of food systems by diversifying crops, promoting sustainable agriculture practices, and increasing access to markets would help reduce the vulnerability of communities to food insecurity, particularly in times of disaster.

5. **Climate-resilient energy systems:** Developing and implementing climate-resilient energy systems, such as renewable energy sources and micro-grids, would increase the resilience of communities to power outages caused by disasters and reduce dependence on centralized energy systems.

6. **Ecosystem-based disaster risk reduction:** Investing in ecosystem-based disaster risk reduction measures, such as restoring degraded ecosystems and implementing nature-based solutions, can reduce disaster risk while also providing co-benefits such as biodiversity conservation and climate change mitigation.

7. **Inclusive and gender-sensitive approaches:** Ensuring that disaster risk reduction measures are inclusive and gender-sensitive, taking into account the needs and perspectives of women, children, and other marginalized groups, can help reduce vulnerability and build resilience in the most at-risk communities.

8. **Resilient urban planning:** Implementing resilient urban planning practices, such as green infrastructure, smart buildings, and improved zoning and land-use regulations, can reduce the impacts of disasters in urban areas and increase the resilience of cities and towns.

9. **Strengthening disaster response and recovery systems:** Improving the capacity and effectiveness of disaster response and recovery systems, including emergency services, health systems, and social safety nets, can reduce the impacts of disasters and help communities recover more quickly.

10. **Regional cooperation and partnerships:** Strengthening regional cooperation and partnerships between countries, organizations, and communities can improve disaster risk reduction and response efforts, promote knowledge-sharing, and increase the effectiveness of interventions in reducing disaster risk.

Measures to build the resilience of critical infrastructure and basic services in Pakistan

1. **Health systems:** Improving the quality and accessibility of healthcare services, especially in rural areas and high-risk zones, can increase the resilience of communities to the impacts of disasters. This can be achieved by investing in infrastructure, training for health workers, and community-based disaster preparedness programs. It is important to address the opioid and substance abuse epidemic and assess the health vulnerabilities of communities in areas most likely to be affected by climate change. Building the capacity of these communities to reduce these vulnerabilities is also essential. Moreover, preventive measures such as vaccines, good quality medication, and clean drinking water should be easily and cost-effectively available to the general public, particularly during climate-related extreme events. The government should also prioritize upgrading and extending disease outbreak

monitoring and forecasting systems.

2. **Food systems:** Increasing the resilience of food systems by diversifying crops, promoting sustainable agriculture practices, and improving access to markets can help reduce the vulnerability of communities to food insecurity, especially during disasters. Pakistan needs to empower agriculture and livestock producers by increasing the use of technology to ensure broader adaptation of climate-smart agriculture. Improved focus and efficiency in government expenditures are also essential to adjust the food system to higher food and energy prices. Research to develop indigenous resilient types of crops should be encouraged.

3. **Water and sanitation systems:** Investing in the improvement and strengthening of water and sanitation systems, especially in high-risk zones, can increase resilience and reduce the impacts of disasters, such as floods and waterborne diseases. Improvement can be achieved in sanitation facilities by providing toilets and latrines that flush into a sewer or safe enclosure. Safe hygiene habits can be promoted through education. Mandatory rainwater harvesting systems can also be implemented to collect and store rainwater for drinking or recharging of underground aquifers and underwater tables in urban areas. Excess surface water available during the monsoon season can also be stored by constructing different types of dams as technical viability allows, along with the restoration of degraded wetlands for storage.

4. **Energy systems:** Developing and implementing climate-resilient energy systems, such as renewable energy sources and micro-grids, can increase the resilience of communities to power outages caused by disasters and reduce dependence on centralized energy systems. There should be an emphasis on increasing the hydropower potential of the country to skew the energy mix away from expensive imported fossil fuels. To prevent an energy crisis, it is crucial that we consume less energy by improving and modernizing energy infrastructure, such as smart grid solutions and smart cities. Additionally, it is important that we replace old devices with energy-efficient solutions, such as replacing traditional light bulbs with LEDs.

5. **Financial systems:** Strengthening financial systems, including microfinance and insurance programs, can increase the resilience of communities to the impacts of disasters and improve their ability to recover from them. The four key functions of a financial system are: (i) producing information ex ante about possible investments and allocating capital; (ii) monitoring investments and exerting corporate governance after providing finance; (iii) facilitating the trading, diversification, and management of risk; and (iv) mobilizing and pooling.

A. Recommendations for realizing the Outcome and Goal of the Sendai Framework

To effectively realize the outcomes and goals of the Sendai Framework in Pakistan, one key step is to sensitize all end stakeholders and beneficiaries, including line departments and ministries, about the targets, goals, and mechanisms outlined in the SFDRR. This will ensure maximum coverage and build the capacity of personnel to follow the required procedures and mechanisms to achieve targets and report progress. Top officials alone should not be relied upon to pass down instructions to their subordinates.

It is important to recognize that each department has a focused mandate, and they should not be assigned priorities and targets that fall outside of their ambit. Respondents have frequently expressed grievances that certain targets assigned to their departments are unachievable given their limited resources. Therefore, it is necessary to revisit institutional arrangements and mandates for the line departments/ministries for the DRM at all levels to clarify task delegation and the chain of command during emergencies.

Pakistan faces increasing disaster events, particularly recurring flooding, emphasizing the need for robust emergency response capabilities and heightened preparedness measures. Comprehensive plans that clearly outline the division of roles and responsibilities between multi-tiered DRM structures and relevant agencies at various levels should be established to achieve disaster risk reduction.

To increase financial resilience against natural disasters, disaster risk financing can help national and subnational governments, businesses, households, farmers, and the most vulnerable to implement sustainable and cost-effective financial protection policies and operations. Pakistan should develop a disaster risk finance strategy that includes a sovereign catastrophe risk financing strategy and the development of a competitive private catastrophe insurance market. This will increase the financial response capacity of the Pakistani government and better protect its citizens and economy.

Also, it is essential that country incorporate appropriate anticipatory action (AA) measures for its disaster preparedness and emergency response. NDMA needs to take lead and provide a collective forum to all stakeholders individually working on AA and align existing anticipatory action interventions by partners into an umbrella of national efforts. This can be achieved through development of a national anticipatory action strategy or framework.

Although every district in one way or other plan for disaster risk mitigation, implementation has been hindered due to lack of resources. To address this issue, Pakistan must explore how donor priorities can align with national strategies and how donor-funded schemes can allocate resources more effectively. This will enable financial resources to be channeled, enabling planning to translate into concrete actions.

Pakistan needs a systematic mechanism for tracking the medium and long-term benefits and impacts of the DRR investment and policies. A robust monitoring system that feeds progress into the SFDRR is crucial to build a strong case of comparative benefits of the DRR investments for sustainable growth, aligned with the SDGs. The availability of information and baseline data to strengthen the understanding of disaster and climate change impacts should be prioritized and made available to all levels of development tiers to mainstream DRR and climate resilience (CR) in all sectoral development. Technical competencies in collecting, managing, and analyzing disaster risk information must be extended to sub-national planners, including sectoral planners, town planners, local planning authorities, and data collection and management agencies at the provincial and district levels.

To ensure that a diverse range of disasters and climate change threats are covered, a decentralized DRR framework is essential. The complete roll-out of the National Disaster Management Plan into action is required to address the specific problems and needs of each locality.

B. Recommendations for progress in Risk Assessment, Information and Understanding

To improve risk knowledge and insight in Pakistan, there are several measures that can be implemented. Firstly, a comprehensive and integrated approach to risk management that considers the interconnections and interdependencies between different risks should be adopted. Tools such as scenario analysis, network analysis, and system dynamics modeling can be used to facilitate this. Moreover, encouraging collaboration between different departments and functions within organizations in Pakistan can help ensure that all relevant perspectives and information are considered when making decisions about risk.

Providing regular training and development opportunities for employees, district managers, and forecasters can help improve their risk knowledge and skills, and promote a culture of learning and continuous improvement within organizations in Pakistan. Collecting and analyzing data on risks, their causes and consequences, and on risk management practices and performance can also help improve risk knowledge and insight in Pakistan.

Stakeholder engagement is another important approach. Engaging with stakeholders on multiple levels can help better understand the risks. Developing projects on cross-cutting themes and developing synergies among these themes, such as Climate Change, disaster risk reduction, technology/integration, and investment decision-making, can also help improve risk knowledge and insight in Pakistan.

To ensure that this knowledge is systematically integrated into decision-making, Pakistan should establish a formal risk management framework and governance structure, with clear roles, responsibilities, and decision-making processes. Risk management tools and techniques, such as risk registers, risk modelling & assessments, and risk reporting systems, can be used to support this.

Additionally, development of a risk-aware culture by regularly communicating about risk management and promoting risk-based decision-making should be encouraged. It is crucial to increase the awareness of risk knowledge and insight at all levels, including Members of Parliament and Government Officers, to systematically integrate it into all decision-making processes.

To ensure that responsibilities for disaster risk reduction are shared in risk identification and reduction, the following must be prioritized:

Promoting Women's Empowerment and Leadership in Disaster Risk Reduction:

1. **Engaging Women in Decision-Making:** Encouraging the active participation of women in disaster risk reduction decision-making processes, including in risk assessments, planning, and implementation, can help to ensure that the perspectives and needs of women are taken into account.

2. **Providing Training and Capacity Building:** Providing training and capacity building opportunities for women in disaster risk reduction can help build the skills and knowledge necessary for effective leadership and decision-making in this area.

3. **Encouraging Women's Leadership:** Encouraging and promoting women's leadership in disaster risk reduction, including in disaster risk reduction organizations and initiatives, can help to ensure that women's voices are heard and their perspectives are taken into account.

4. **Gender Inclusive Funding:** Funding decisions should be made based on concrete financial and economic indicators like Internal Rate of Return (IRR), Return on Investment (ROI), Economic Internal Rate of Return (EIRR), Cost-Benefit Analysis (CBA), Cost-Effectiveness Analysis (CEA), and Net Present Value (NPV) and the application should be mandatory by regulations and laws for all projects. Gender-inclusive projects should be strongly encouraged. The gender action plan should be further improved by incorporating Gender Based Violence (GBV) to climate the gender gap and encourage women’s participation and economic empowerment. The Climate Change Adaptation (CCA) and DRR could be included in the academic courses for the awareness creation of youth.

Ensuring "No One is Left Behind":

1. **Inclusive Risk Assessments:** Conducting risk assessments that consider the needs and perspectives of marginalized communities - including women, children, older people, people with disabilities, and indigenous communities - is crucial to addressing their unique vulnerabilities. This inclusive approach can help ensure that specific needs are met and vulnerabilities are addressed.

2. **Mainstreaming Inclusion:** Mainstreaming inclusion throughout all phases of disaster risk

reduction planning and implementation can help ensure that the needs and perspectives of marginalized communities are taken into account. By adopting this approach, marginalized communities can have a more equitable involvement in the planning and implementation of disaster risk reduction initiatives.

3. **Building Resilience:** Strengthening the resilience of marginalized communities is essential to improving their ability to cope with the impacts of disasters. Community-based disaster risk reduction programs and initiatives can be effective in building resilience, allowing communities to be better prepared and equipped to deal with the impacts of disasters.

4. **Encouraging Individual Responsibility:** Adopting key measures, such as electronic and print media and curriculum development, can help promote individual responsibility for risk identification and reduction. By educating individuals and increasing awareness about disaster risk reduction, more people can take responsibility for identifying and reducing risks in their communities.

Ensuring "No Ecosystem is Left Behind":

1. **Integrating Environmental Considerations:** Integrating environmental considerations into all phases of disaster risk reduction is crucial to mitigating the impacts of disasters on ecosystems. This approach can help ensure that environmental considerations are taken into account in decision-making processes. Nature-based solutions should be explored for dealing with the impacts of climate change.

2. **Promoting Ecosystem-Based Approaches:** Promoting ecosystem-based approaches to disaster risk reduction, such as integrating environmental considerations into disaster risk reduction plans and programs, can help ensure that the needs and perspectives of ecosystems are considered. By adopting this approach, disaster risk reduction strategies can be more sustainable, and the impacts on ecosystems can be minimized.

3. **Protecting Ecosystems:** Protecting and restoring ecosystems through conservation and restoration programs is essential to reducing the vulnerability of ecosystems to the impacts of disasters. These programs can help strengthen ecosystem resilience, making them better able to withstand and recover from disasters. By protecting ecosystems, we can also protect many benefits they provide to people, such as clean water and air, food, and other natural resources.

In conclusion, disaster risk reduction requires a collaborative, multi-stakeholder approach that takes into account the needs and perspectives of all relevant stakeholders, including women, marginalized communities, and ecosystems. Only through a shared responsibility and inclusive approach, we can ensure that no one, and no ecosystem, is left behind.

C. Recommendations for progress in Risk Governance and Management

To empower local authorities and partnerships to strengthen risk reduction at the subnational and local levels, the following priority actions can be taken, especially with the help of international partners:

1. **Strengthening National Governance & Technical Capacities:** Establishment of a technology-driven National Emergency Operations Center (NEOC) to serve as a digital hub, developing models and projections, translating into plans and early warnings.

2. **Engaging Local Partnerships:** Engaging local partnerships, including local authorities, communities, and CSOs, can ensure that the perspectives and needs of all relevant stakeholders are taken into account. Local communities are already involved in projects such as Community-Based Disaster Risk Management (CBDRM), School-Based Disaster Risk Management (SBDRM), and Community Emergency Response Teams (CERT). Incentivizing them through small financial or in-kind means can promote ownership and motivation.

3. **Supporting Local-Level Planning:** Supporting local and sub-national level planning for disaster risk reduction, including developing local disaster risk reduction plans, can address the specific needs and vulnerabilities of local communities.

4. **Providing Technical, Financial and Capacity Building Support:** Providing technical and financial support to local authorities and communities can ensure that necessary resources are available for effective action. In the longer-term, capacitating, through training and capacity-building opportunities, will ensure strengthened and self-reliant local authorities and communities equipped with skills and knowledge necessary for effective action.

5. **Promoting Coordination and Cooperation:** Promoting coordination and cooperation between international partners, national authorities, and local authorities and communities can ensure that resources and expertise are shared effectively and that efforts are complementary and not duplicative.

6. **Encouraging Community Participation:** Encouraging community participation in disaster risk reduction, including through community-based disaster risk reduction initiatives and programs, can ensure that the needs and perspectives of communities are taken into account.

7. **Mainstreaming DRR into Development Planning:** Mainstreaming disaster risk reduction into development planning, including integrating disaster risk reduction considerations into development plans and programs, can ensure that disaster risk reduction is integrated into all relevant development initiatives. The priority action is to arrange requisite funding for

implementation of proposed plans/policies for Disaster Risk Reduction, training programs for professionals working in the DRR sector, and awareness seminars/workshops.

In conclusion, a multi-stakeholder approach to disaster risk reduction that considers the needs and perspectives of all relevant stakeholders, including local authorities, communities, and international partners, is necessary to empower local authorities and partnerships and to strengthen risk-reducing action at the subnational and local levels.

To ensure that disaster risk management (DRM) is not viewed as a separate sector in Pakistan, but instead becomes a practice that is systematically applied across all sectors, the following adjustments or key measures need to be taken:

1. **Integration of DRM into National Policies and Strategies:** The integration of the DRM into national policies and strategies, such as the National Disaster Management Plan, sectoral policies, and economic plans, can help ensure that all relevant sectors take the DRM considerations into account.

2. **Mainstreaming DRM into Sector Planning and Implementation:** The mainstreaming of the DRM into sector planning and implementation is crucial. This can be done by integrating the DRM considerations into sectoral planning and budgeting processes to ensure that the DRM is integrated into all relevant sectoral activities.

3. **Building DRM Capacity across Sectors:** Building the DRM capacity across sectors by providing training and capacity building opportunities for sectoral officials and practitioners can help ensure that the DRM considerations are integrated into all relevant sectoral activities.

4. **Engaging Stakeholders across Sectors:** Engaging stakeholders across sectors, including communities, private sector entities, civil society organizations, and academia, in the DRM can ensure that all relevant sectors take the DRM considerations into account.

5. **Encouraging Inter-Sectoral Cooperation:** Encouraging inter-sectoral cooperation through the development of inter-sectoral committees and working groups can ensure that the DRM considerations are integrated into all relevant sectoral activities.

6. **Collaborative Platform:** Establishing a collaborative platform at each level (district, provincial and federal) with a unified command, capitalizing on the learnings from the NCOC experience during the main phases of COVID-19 Pandemic and NFRCC during Floods 2022 response, to institutionalize such platforms and avoid makeshift arrangements.

7. **Incorporating DRM into Regulatory, Legislative and Policy frameworks:** Incorporating the DRM into regulations, legislations, plans and policies, such as building codes and land-use

planning regulations, can ensure that the DRM considerations are integrated into all relevant sectoral activities.

8. **Monitoring and Evaluation:** Regularly monitoring and evaluating the implementation of the DRM across all sectors can help identify areas for improvement and ensure that the DRM is being integrated into all relevant sectoral activities.

9. **Climate change and International Financial Reporting Standards (IFRS standards):** While there is no single IFRS standard that addresses climate change, IFRS standards provide a framework for incorporating climate-related risks into companies/institutions' financial reporting. The institutions/companies must consider climate-related matters when the effect is material on the financial statements.

10. **Disaster Risk Reduction and Climate Change Adaptation as a Single Theme:** Disaster risk reduction and climate change adaptation should be realized and implemented as a cross-cutting theme, as they overlap with each other.

11. **Economic Analysis for Funding/Investment Decision:** Implementation of economic impact assessments, both qualitative and quantitative, for all development and humanitarian projects should be made part of legal agreements. Decision on funding should be made on concrete basis of calculations such as Cost-Benefit Analysis (CBA), Economic Internal Rate of Return (EIRR), Cost-Effective Analysis (CEA), and Net Present Value (NPV).

In conclusion, a systemic approach to the DRM, which takes into account the needs and perspectives of all relevant sectors and stakeholders in Pakistan, is necessary to ensure that the DRM is no longer treated as a separate sector but is a practice that is systematically applied across all sectors.

D. Recommendations for progress in Investment in Risk Reduction and Resilience

Public financial institutions can play a role in encouraging both public and private organizations to set strategic goals like achieving "net zero" or becoming carbon neutral. The Paris Agreement 2015, a legally binding international treaty on climate change, requires companies to reallocate significant resources in order to achieve the agreed goals. Consequently, companies may face various risks and opportunities as they strive to meet these goals, and they will need to disclose the financial implications of climate-related challenges they encounter.

While many companies have started to provide narrative reporting on climate-related issues, some investors are requesting additional disclosure beyond the minimum legal requirements to better inform their decision-making. However, it is often unclear from companies' reporting how they will achieve, monitor, or ensure progress towards strategic goals like "net zero" or carbon neutrality.

As investors and other stakeholders demand more climate-related disclosure, many companies are aligning their climate governance with reporting frameworks, such as "The Task Force on Climate-related Financial Disclosures" (TCFD).

Investors may require various pieces of information from companies, such as the arrangements and strategy for assessing and considering climate-related issues, the metrics used to monitor climate-related goals and targets, the relevant opportunities and risks concerning climate-related issues, and the potential effects of different climate scenarios on the company's profitability, net assets, products, customers, suppliers, and so on. Additionally, investors may seek an assessment of the company's viability over the long term, taking into account climate-related issues and the viability of the company's business and business model. Government may play its role by introducing mandatory reporting requirements for businesses, especially those operating in more vulnerable sectors.

To ensure that risk is priced more accurately within all financial transactions, public institutions can take several measures at national and international levels such as:

- Implementing and enforcing regulations that require companies to disclose their risks and liabilities to investors and the public can increase transparency in financial markets.
- Encouraging the development of standardized risk assessment and pricing models for financial transactions can aid in risk pricing accuracy.
- Increasing transparency in financial markets and requiring companies to disclose their exposure to risks such as climate change, natural disasters, and other systemic risks can also be helpful.
- Introducing taxes, subsidies, or other economic incentives that internalize the costs of externalities associated with certain investments or financial transactions can be an effective way to price risk more accurately.
- Fostering international cooperation and coordination on risk assessment and pricing can help to ensure a level playing field for investors and to avoid regulatory arbitrage.
- Encouraging the development and adoption of sustainable finance frameworks that incorporate environmental, social, and governance (ESG) factors into financial decision-making can help promote more responsible investment practices.
- Investing in research and development to better understand the long-term risks associated with various financial transactions and to develop more accurate and robust risk assessment and pricing models can aid in ensuring accurate risk pricing.

It is important to note that ensuring risk is priced accurately requires accurate data and risk information sharing by partners and stakeholders, both public and private.

Priority Risk Reduction Actions

Here are some steps that can be undertaken to strengthen resilience of businesses and industries to disaster risks by 2030:

1. **Conduct risk assessments and develop disaster risk management plans:** It is important for businesses and industries to assess their exposure to disaster risks and develop disaster risk management plans that include preventive measures, emergency response plans, and business continuity plans.

2. **Develop business continuity plans:** Businesses and industries should create business continuity plans that enable them to quickly resume operations after a disaster, including securing alternative supply chains and logistics.

3. **Promote risk-informed decision-making:** Decision-makers in business and industry sectors should be trained on how to use risk information to inform investment decisions, including measures to reduce exposure and vulnerability to disaster risks.

4. **Foster public-private partnerships:** Governments and businesses should collaborate to share information, expertise, and resources to enhance the resilience of critical infrastructure and supply chains.

5. **Invest in disaster-resilient infrastructure:** Businesses and industries should invest in infrastructure that can withstand and quickly recover from natural disasters, such as upgrading buildings to withstand earthquakes and retrofitting ports to protect against storm surges.

6. **Foster a culture of risk awareness:** Businesses and industries should promote a culture of risk awareness, including training employees on how to respond to disasters, regularly conducting drills and exercises, and engaging in community preparedness initiatives.

7. **Integrate disaster risk reduction and climate change adaptation into corporate social responsibility:** Companies should integrate disaster risk reduction and climate change adaptation into their corporate social responsibility activities, including investing in disaster preparedness and response programs, supporting disaster risk reduction research, and engaging in public awareness campaigns.

8. **Implementation of proposals set out in IFRS S1 (Accounting standards) in developing countries, including Pakistan:** International Financial Reporting Standards (IFRS) S1 requires

entities to disclose material information about all significant sustainability-related risks and opportunities to which they are exposed to. The IFRS S2 focuses on the specific requirements for the identification, measurement, and disclosure of climate-related financial information. As climate change impacts society and companies alike, corporations are responding to its impact as investors demand action. Investors need to know how a company is considering the impact of climate change on its business model, risk strategy, and financial statements. Companies will need to disclose the financial implications of climate-related challenges that they face.

9. **Special planning for flood risk resilience:** Special planning needs to be carried out for all businesses and industries. Flood-prone areas should be identified, and if possible, businesses and industries should be relocated from these areas. Otherwise, flood protection measures may be carried out in public-private partnership mode to protect businesses and industries.

E. Recommendations for Collaboration, Partnership and Cooperation

The application of the nexus approach at both strategic and operational levels can prove useful as it identifies mutually beneficial responses based on understanding the synergies between different sectors. Projects funded for pandemics should be designed using the nexus approach to encourage maximum utilization of capital. Additionally, electronic education should be promoted, and technological projects should be encouraged in Pakistan to cope with future pandemic challenges, such as electronic money transfer, e-learning, and online trading. Mental health issues arising from isolation during the pandemic should be proactively managed, as they impact livelihood and income generation per household, ultimately impacting the national GDP. Research and analysis of emerging medical issues due to climate change should be identified, and mitigation measures should be established, including the establishment of research labs in academia or elsewhere. Publications for creating awareness among the general public should also be encouraged. Government should also focus on the issue of climate migrations, expected to reach 2 million climate migrants by 2050. It should identify existing trends and future patterns to develop a comprehensive climate migration policy to avoid economic and social losses. These measures will help to keep the GDP sustainable during difficult times, such as those faced during the COVID-19 pandemic or climate shocks.

Drawing on the learnings from the NCOC and NFRCC mechanisms, unified command and control mechanism should be established at the national level. The Provincial Disaster Management Commissions and Provincial Disaster Management Funds should also be revitalized and made functional. Additionally, revision of the National Disaster Risk Reduction Policy and translating to provincial level through provincial DRR policies, in the context of new risks is needed. Moreover, to address the systemic nature of risk, the following frameworks and strategies need to be adjusted

both in Pakistan and internationally:

At the National Level

1. **Policy Adjustments:** Revising existing policies and creating new ones that take into account the systemic and interconnected nature of risk can help to mitigate the impacts of new and emerging threats. This could involve the development of a more comprehensive and integrated approach to risk management and disaster risk reduction, as well as the strengthening of health systems and emergency preparedness and response capacities.

2. **Regulatory, Legislative and Policy Frameworks:** Reviewing and updating existing regulatory, legislative and policy frameworks to ensure that they are equipped to respond to the changing nature of risks, including indirect and cascading impacts. This could involve the development of new regulations and laws that encourage the sharing of information and the collaboration between different sectors and stakeholders.

3. **Organizational and Investment Adjustments:** Encouraging investment in risk management and disaster risk reduction and strengthening the capacity of organizations and institutions to effectively respond to risk. This could involve the creation of new risk management and disaster risk reduction funds, as well as the strengthening of existing ones.

At the Local Level

1. **Community Engagement:** Engaging with local communities and encouraging their active participation in risk management and disaster risk reduction can help to better understand local risks and to develop locally appropriate responses. This could involve the development of community-based risk assessment and monitoring systems, as well as the creation of community-based early warning and response systems.

2. **Local-Level Planning:** Incorporating risk management and disaster risk reduction into local-level planning processes, including land use planning and urban planning, can help to prevent the creation of new risks and to reduce the impacts of existing ones. This could involve the development of local-level risk management and disaster risk reduction plans and strategies, as well as the integration of these considerations into other planning processes.

At the Regional Level

1. **Regional Cooperation:** Encouraging regional cooperation and collaboration between neighboring countries can help better understand the transboundary nature of risks, such as transnational disasters, and to develop more effective regional risk management and disaster risk reduction strategies. This could involve the creation of regional risk

management and disaster risk reduction mechanisms, as well as the strengthening of existing regional institutions and networks.

2. **Regional Planning:** Incorporating regional perspectives into risk management and disaster risk reduction planning processes can help to better understand the regional dimensions of risks and to develop more effective regional strategies. This could involve the development of regional risk assessments, as well as the integration of regional considerations into national risk management and disaster risk reduction planning processes.

3. **Region level expansion of UNDRR:** This MTR SFDRR provides an opportunity to overview the operational model of UNDRR and expand the regional footprints of UNDRR through presence in additional locations by establishing further sub-regional offices. This increased outreach of UNDRR will help in efficient implementation of its scope, act as technical support and extended hubs for increased technical cooperation between global north and south for sub-regions.

At the International Level

1. **Cooperation and Collaboration:** Encouraging international cooperation and collaboration between countries can help better understand the global nature of risks and to develop more effective global risk management and disaster risk reduction strategies. This could involve the creation of international risk management and disaster risk reduction mechanisms, as well as the strengthening of existing international institutions and networks.

2. **Incorporating perspectives:** Incorporating international perspectives into risk management and disaster risk reduction planning processes can help to better understand the global dimensions of risks and to develop more effective global strategies. This could involve the development of global risk assessments, as well as the integration of international considerations into national and regional risk management and disaster risk reduction planning processes.

3. **Technology transfer and sharing of technical expertise:** Developed countries, with their technological advancements and expertise should support developing countries and LDCs in improving their systems and increasing resilience, as developing and LDCs lack capacity, resources and capability to do so without external assistance.

4. **Establishing a Global DRR Fund:** Developing countries and LDCs possess limited resources and are forced to prioritize basic needs over DRR. It is proposed that a dedicated Global DRR Fund, under the UNDRR may be established to finance the global DRR agenda and support the implementation of SFDRR. This Fund should be separate from the climate-focused

financing windows and proposed Loss and Damages Fund under UNFCCC.

In Pakistan, several new or emerging initiatives and partnerships can support the implementation of the Sendai Framework. These include partnerships with private sector actors to leverage their expertise and resources, engagement with local communities and civil society organizations to build resilience at the grassroots level, and collaborations with research institutions and academia to generate evidence-based policy recommendations. Public-private partnerships (PPP) can also play a significant role in achieving risk-informed sustainable development in Pakistan. These long-term arrangements between the government and private sector institutions can help fund public infrastructure projects and initiatives effectively by creating synergies of expertise from both sectors. PPP models can be applied in all sectors where project implementation, such as reconstruction, energy, transportation, technology, and rehabilitation, are key deliverables of the programs. Development partners, which are organizations working in partnership with national and local government bodies, can support managing projects in local areas for the benefit of vulnerable populations. They can provide better support by holding multi-stakeholder consultations with government, experts, and the private sector before planning any project to address challenges regarding funding, technical capacity, governance, ownership, and sustainability.

Priority areas for partnerships to enable risk-informed sustainable development in Pakistan include disaster risk reduction, climate change adaptation, ecosystem conservation and restoration, infrastructure development, and inclusive economic growth. To deal with any kind of disaster for priority area 3 and 4 of the Sendai Framework, dedicated funds for Disaster Management need to be established, national DRF policy to be developed and anticipatory action to be incorporated in disaster preparedness and emergency response.

Under the Technology Framework of Paris Agreement 2015, technology development and transfer for both improving resilience to climate change and reducing GHG emissions is a key action in the fight against climate change. Developed countries should support Pakistan in installing hydro-meteorological and groundwater monitoring stations for early warning systems and timely decision-making, which is mandatory for achieving the Sendai Framework targets and Sustainable Development Goals. Development partners and the international community can provide better support by aligning their assistance with national priorities and development plans, adopting a whole-of-government approach to programming, and promoting knowledge sharing and capacity building among stakeholders. They can also explore innovative financing mechanisms, such as blended finance and risk-sharing instruments, to mobilize resources and scale up impact.

To support the government of Pakistan in achieving the goals of the Sendai Framework by 2030, there are several initiatives and partnerships that could be implemented. These include:

1. **Strengthening disaster risk reduction (DRR) capacities and resilience of local communities**

and institutions: This could involve engagement with civil society organizations and the private sector to build resilience at the grassroots level.

2. **Strengthening of seismic monitoring capacity:** A dense network of seismometers and a reliable communication network for data acquisition from remote sites can be established to enhance the monitoring of seismic activity in the country.

3. **Expansion of Tsunami Early Warning Alarm System Network:** This would involve expanding the Tsunami Early Warning Alarm System Network to cover all tsunami vulnerable communities of Sindh and Baluchistan.

4. **Developing and implementing climate adaptation strategies:** The government can develop strategies to adapt to climate change and implement them in the most vulnerable areas.

5. **Encouraging public-private partnerships to invest in DRR and climate adaptation measures:** The private sector can be engaged in investing in disaster risk reduction and climate change adaptation measures.

6. **Expanding social protection programs:** This would help enhance the resilience of vulnerable groups in the face of disasters and climate change.

7. **Leveraging technology and innovation:** Technology and innovation can be leveraged to improve early warning systems and disaster response capabilities.

8. **Tapping into Climate financing for DRR:** In absence of global DRR financing window, Pakistan may leverage the climate financing for disaster risk reduction through climate change adaptation-focused interventions.

To promote risk-informed sustainable development in Pakistan, it is important to establish partnerships in priority areas such as:

1. **Climate-resilient infrastructure and housing:** It is crucial to develop infrastructure and housing that can withstand natural disasters and climate change impacts. Partnerships can be formed with private sector actors to leverage their expertise and resources in building resilient infrastructure and housing.

2. **Disaster risk reduction and preparedness:** Building disaster risk reduction capacities and preparedness measures at all levels is crucial for sustainable development. Partnerships can be established with local communities and civil society organizations to build resilience at the grassroots level. Collaboration with research institutions and academia can generate evidence-based policy recommendations.

3. **Water resource management:** Pakistan is a water-stressed country and faces challenges related to water scarcity, quality, and management. Partnerships can be established with international organizations and development partners to support the implementation of sustainable water resource management practices.

4. **Food security and agriculture:** Agriculture is a key sector in Pakistan's economy, and sustainable agricultural practices can contribute to food security and poverty reduction. Partnerships can be established with local communities, private sector actors, and development partners to promote sustainable agriculture practices and improve food security.

5. **Health systems and pandemic preparedness:** The COVID-19 pandemic has highlighted the need for strong health systems and pandemic preparedness measures. Partnerships can be established with international organizations and development partners to support strengthening of health systems and pandemic preparedness measures.

Development partners such as UNDP, GCF, JICA, USAID, FCDO, and the international community can play a vital role in supporting Pakistan to achieve the goals of the Sendai Framework by 2030. Some ways they can provide better support include:

- Offering technical and financial assistance to strengthen national and local capacities in disaster risk reduction and climate adaptation.

- Developing and implementing joint programs and initiatives that prioritize risk-informed sustainable development, especially risk-sensitive urban development and spatial land-use planning.

- Encouraging public-private partnerships to invest in disaster risk reduction and climate change adaptation measures.

- Fostering knowledge-sharing and innovation through research and development of best practices.

- Providing support for monitoring and evaluating progress towards achieving the Sendai Framework goals.

By leveraging their expertise, experience, and resources, development partners and the international community can help Pakistan build its resilience to disasters and achieve sustainable development. These partnerships can be critical to achieving the Sendai Framework goals, particularly in priority areas such as climate-resilient infrastructure and housing, disaster risk reduction and preparedness, water resource management, food security and agriculture, and health systems and pandemic preparedness.

VI. ANNEXES

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