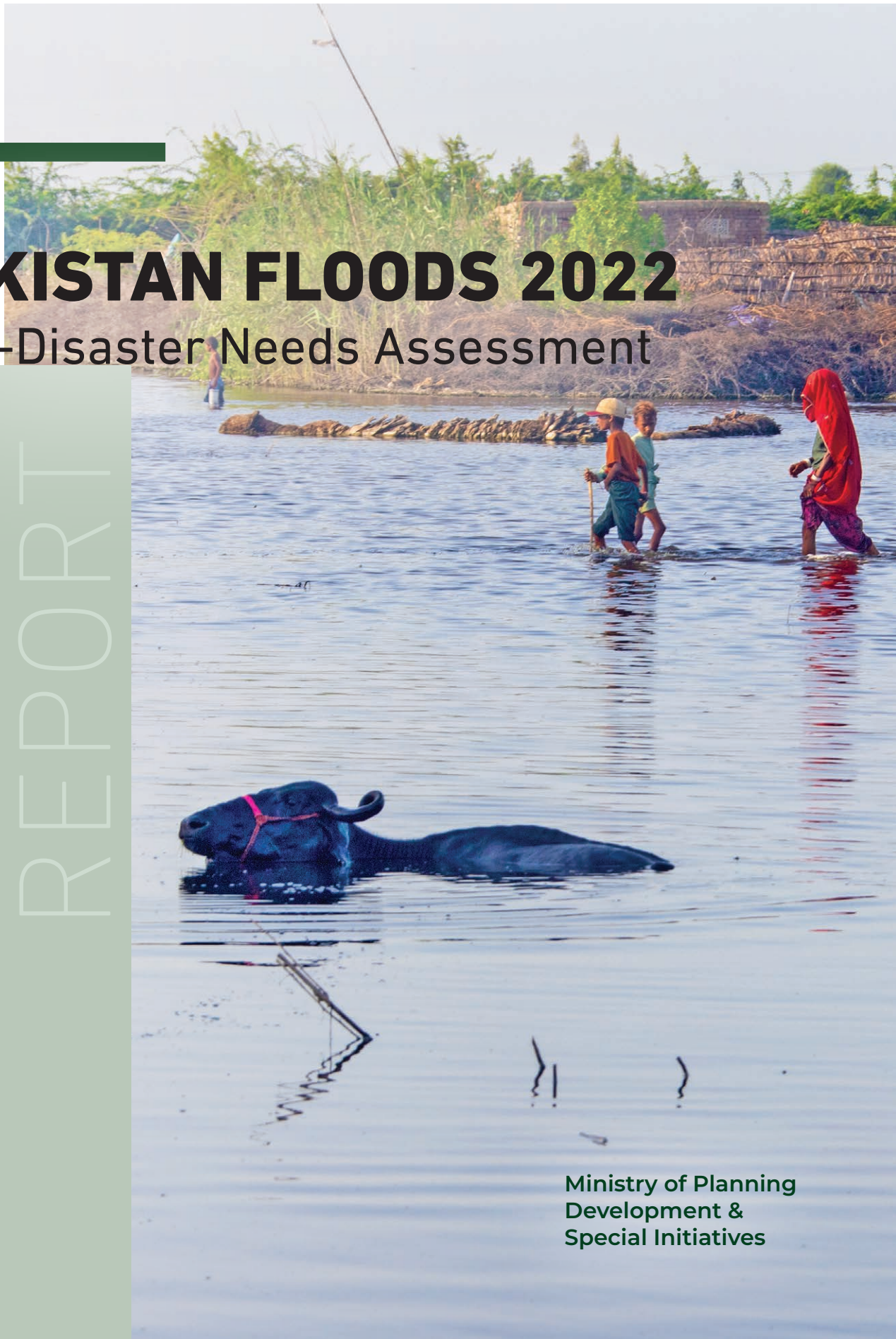
# PAKISTAN FLOODS 2022

## Post-Disaster Needs Assessment

MAIN REPORT



Ministry of Planning
Development &
Special Initiatives

# PAKISTAN FLOODS 2022

## Post-Disaster Needs Assessment

# MAIN REPORT

© October 2022. The Government of Pakistan, Asian Development Bank, European Union, United Nations Development Programme, World Bank

The Pakistan Post-Disaster Needs Assessment is a product of the Government of Pakistan prepared with the support of the Asian Development Bank, the European Union, United Nations Agencies with technical facilitation by the United Nations Development Programme, and the World Bank. The findings, interpretations, and conclusions expressed in this work do not necessarily reflect the views of the partner organizations, their Board of Executive Directors, or the governments they represent. The organizations do not guarantee the accuracy of the data included in this work.

*"The boundaries, colors, denominations, and other information shown on the map in this work do not imply any judgment on the part of the Asian Development Bank, the European Union, the United Nations Development Programme, or the World Bank concerning the legal status of any territory or the endorsement or acceptance of such boundaries. Partner Agencies have supported the government in application of the Post-Disaster Needs Assessment methodology and analysis of data received from provincial and federal agencies, ministries and departments."*

Rights and Permissions

The material in this work is subject to copyright. To encourage dissemination of this information, this work may be reproduced, in whole or in part, for non-commercial purposes as long as full attribution to this work is given.

Any queries should be addressed to the Planning Commission, Ministry of Planning Development & Special Initiatives, P Block Pakistan Secretariat, Islamabad, Pakistan; phone: +92-51-9203865; fax: +92-51-9201777

Cover photo: UNDP

**Disclaimer**

This report summarizes the findings of the Post-Disaster Needs Assessment that took place in Pakistan following the floods of 2022. The report is based on data collected between September and mid-October 2022. Although all efforts have been made to improve the accuracy of the information that was collected and analyzed, the assessment was produced in a quick timeframe to ensure the relevance of the estimations. Given the ongoing nature of the disaster and the lack of access to inundated areas at the time of publication, remotely sourced data has been triangulated and validated where possible against ground-based information obtained from the Government of Pakistan, local agencies, and international partners. Based on these constraints, the authors of the report cannot guarantee the accuracy of the data included in this work. It provides an overall picture of the effects of the floods on the population, physical assets, infrastructure, and service delivery, but it is not a replacement of in-depth sector-specific assessments. More detailed sectoral analyses can be found in the Supplemental Report, which also includes a full list of contributors. The report uses the exchange rate US$1 = PKR 214.8.[1] All monetary estimates are rounded off to nearest whole number and may not add up to the totals.

1 The average exchange rate during the time of floods, based on the values issued by the State Bank of Pakistan as of the first working day of each month, from June to September 2022.

# Foreword

The 2022 floods have shown Pakistan's high vulnerability to climate change despite contributing less than one percent of global greenhouse gas emissions. This disaster has demonstrated what this vulnerability looks like for the people of the country. Since June this year, the federal and provincial authorities have been working tirelessly to manage the massive relief efforts that are ongoing across the country, together with local, national, and international partners.

One-third of the country has been under water, and 33 million people have been affected. Nearly 8 million people are reportedly displaced. The scale of the disaster is unprecedented in Pakistan, exceeding the damage of the 2010 floods. It will take a collective, international effort to recover from the impacts of this calamity.

The Post-Disaster Needs Assessment that has been undertaken will help understand the scale of resources required for recovery and reconstruction by calculating the damage, loss, and needs. However, the recovery and reconstruction needs are likely to exceed Pakistan's available resources and that assistance from multilateral and bilateral partners and philanthropists will be needed if the country is to rebuild itself in a sustainable and resilient manner. This comes at a time when countries around the world, including Pakistan's friends and partners, are also facing the impacts of the global economic challenges. We would therefore like to acknowledge those partners who are always ready to support Pakistan's recovery.

Pakistan faces a cascading crisis. Firstly, in the wake of rising prices at the global level, Pakistan was facing significant economic challenges even before the recent floods. In the face of very large fiscal and current account deficits, the government took important steps earlier this year to stabilize the economy, including implementing difficult energy tariff adjustments and passing a contractionary FY23 budget. Secondly, the economic outlook has worsened with the floods, and market risk perceptions are once again rising. Growth is expected to slow down, the trade deficit is expected to expand, and revenues are expected to decline. Despite the difficulties, the Government is committed to doing its part to mobilize all domestic resources possible and target them toward those most in need.

Photo credit: UNDP

Thirdly, the floods have disproportionately hit the poorest households in poorest areas. Those areas of the country where human development outcomes were lowest even before the floods have been hardest hit. As the country recovers from this terrible disaster, there is an opportunity to do things differently and to create a better future, especially for areas of the country that had not benefited from the development of the last two decades. Enhancing Pakistan's resilience to shocks and stresses amidst climate change, especially for the poorest, by addressing the underlying drivers of vulnerability and building back better, is essential for the country's future.

This PDNA—an effort led by the Government of Pakistan and supported by a core team comprising the Asian Development Bank, the European Union, and United Nations Agencies, with facilitation from the United Nations Development Programme and the World Bank—is a critical first step in the process of recovery and reconstruction. National and international experts across 17 sectors have collaborated closely with federal and provincial ministries, departments, and agencies to collect data from the 94 calamity-hit districts. The report will support the prioritization and targeting of resources through multisector recovery planning, which is generally undertaken as part of developing the Disaster Recovery Framework. It is the first step on the journey to climate-resilient, inclusive, and people-centered recovery.

On behalf of the Government of Pakistan, I would like to thank all those who have supported Pakistan through the rescue and relief stage of the disaster and those who will continue to support the country through the recovery and reconstruction phase. With this collective resolve, I believe we can build a brighter future from the ruins of the disaster.

**Ahsan Iqbal**
Minister for Planning, Development and Special Initiatives

# Acronyms

| | |
|---|---|
| **ADB** | Asian Development Bank |
| **ATM** | Automated Teller Machine |
| **BMI** | Body Mass Index |
| **CPI** | Consumer Price Index |
| **CSO** | Civil Society Organization |
| **EU** | European Union |
| **FRP** | Floods Response Plan |
| **FY** | Fiscal Year |
| **GBV** | Gender-based Violence |
| **GDP** | Gross Domestic Product |
| **HCI** | Human Capital Index |
| **KP** | Khyber Pakhtunkhwa |
| **MFB** | Microfinance Bank |
| **MFI** | Microfinance Institution |
| **MoPDSI** | Ministry of Planning Development and Special Initiatives |
| **NDMA** | National Disaster Management Agency |
| **NFRCC** | National Flood Response Coordination Centre |
| **NGO** | Non-governmental Organization |
| **PDNA** | Post-Disaster Needs Assessment |
| **PMD** | Pakistan Meteorological Department |
| **SAR** | Synthetic Aperture Radar |
| **SPI** | Sensitive Price Index |
| **SSGC** | Sui Southern Gas Company |
| **UN** | United Nations |
| **WASH** | Water, Sanitation, and Hygiene |
| **WB** | World Bank |
| **WBG** | World Bank Group |

# Acknowledgments

This report has been prepared under the leadership of the Ministry of Planning, Development and Special Initiatives through its Flood Coordination Cell, supported by the Asian Development Bank, the European Union, the United Nations agencies with technical facilitation by the United Nations Development Programme, and the World Bank with financial and technical support from the Global Facility for Disaster Reduction and Recovery. It also benefited from the valuable inputs of bilateral and multilateral partners. This report has benefited from the guidance and inputs of many government agencies and departments including, at the federal level, the Planning Commission, the Economic Affairs Division, the National Disaster Management Agency, and the Space and Upper Atmosphere Research Commission. The report has also been guided and informed by provincial and district governments, including the Planning and Development Departments and Provincial Disaster Management Agencies. The team gratefully acknowledges the hard work of everyone who contributed to produce this document, which will guide the efforts of all those involved in responding to the 2022 Pakistan floods. A full list of contributors can be found in the Supplemental Report, which will be published separately and also includes detailed write-ups on each chapter. Photographs used in this publication were taken by development agencies and partners unless stated otherwise. The team would like to express their deepest thanks and appreciation to all the contributors.

.

# Table of Contents

# Executive Summary

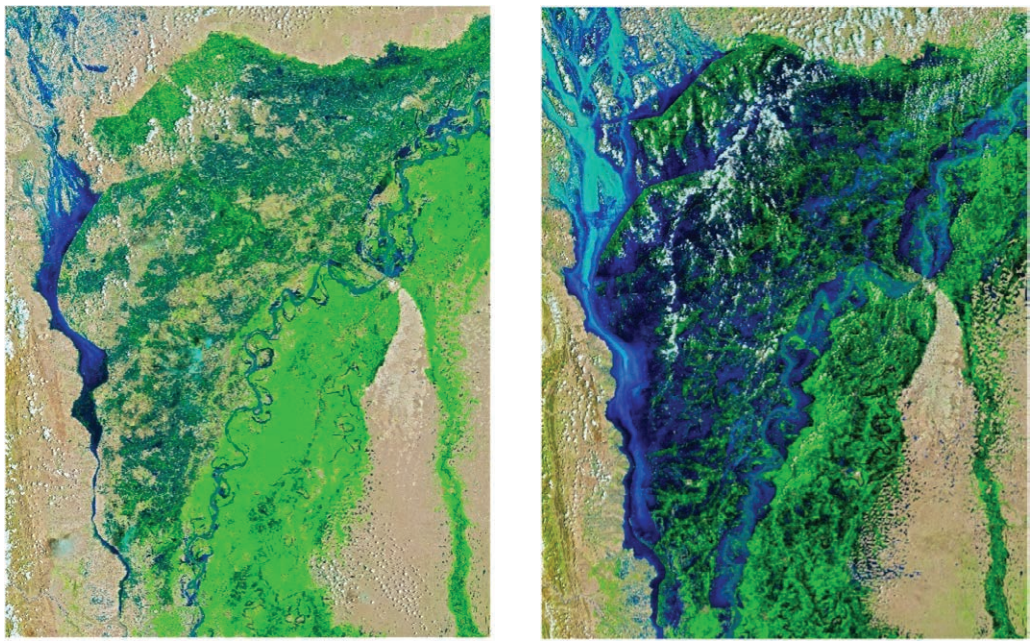
Photo credit: UNDP

# Context

Between June and August 2022, torrential rains and a combination of riverine, urban, and flash flooding led to an unprecedented disaster in Pakistan. According to the National Disaster Management Authority (NDMA), around 33 million people—that is, one in seven—have been affected by the floods, including nearly 8 million displaced. The floods have taken the lives of more than 1,700 people, one-third of which were children.[2] Rain-induced floods, accelerated glacial melt, and resulting landslides devastated millions of homes and key infrastructure, submerging entire villages and destroying livelihoods. Preliminary estimates suggest that, as a direct consequence of the floods, the national poverty rate will increase by 3.7 to 4.0 percentage points, pushing between 8.4 and 9.1 million people into poverty. As of October 11, 94 districts were declared as "calamity hit," accounting for more than half of all districts in the country. The majority were in the provinces of Balochistan, Sindh, and Khyber Pakhtunkhwa (KP). Out of the 25 poorest districts in the country, 19 were calamity-affected.

2 NDMA. October 19, 2022. "NDMA Floods (2022): Sitrep Report No.128." *https://cms.ndma.gov.pk/storage/app/public/situation-reports/October2022/QECa7rSLzWINuxZFHrHV.pdf.*

## FIGURE 1. EXTENT OF FLOODING COMPARISON BETWEEN AUGUST 4 AND 28, 2022



Source: NASA Earth Observatory images by Joshua Stevens, using Landsat data from the US Geological Survey and VIIRS data from NASA EOSDIS LANCE, GIBS/Worldview, and the Joint Polar Satellite System.[3]

Pakistan ranks among the top 10 countries worldwide most affected by climate change.[4] The country has observed changing weather patterns, including variations in precipitation and temperatures, increased frequency and severity of tropical storms and coastal rains, glacial melt, glacial lake outburst flooding, sea level rise, loss of biodiversity, desertification, and droughts.[5] At the coastal belts of Balochistan and Sindh, climate impacts are observed in increased frequency and severity of tropical storms, coastal rains, and seawater intrusion. The plains of Punjab and Sindh experience extended and frequent riverine floods and heatwaves, affecting economic and human development.[6]

In the summer of 2022, the country experienced its wettest August since 1961. Sindh and Balochistan provinces were subject to unprecedented rainfall, surpassing average monthly totals by six and seven times, respectively. Attribution research has shown that the five-day maximum rainfall, which is a measure of heavy precipitation, of these two provinces was around 75 percent more intense than it would have been had the climate not warmed by 1.2°C.[7] The floods came on the heels of a severe heatwave—previously a 1-in-1,000-year event— and drought emergency during which temperatures continuously remained above 45°C, resulting in crop losses, power outages, and forest fires. [8]

3 The images combine shortwave infrared, near infrared, and red light (bands 6-5-4) to better distinguish flood waters (deep blue) beyond their natural channels. Original image sourced from: *https://earthobservatory.nasa.gov/images/150279/devastating-floods-in-pakistan*.

4 Eckstein, David, Vera Künzel, and Laura Schäfer. 2021. "Global Climate Risk Index 2021." Germanwatch Briefing Paper. *https://www.germanwatch.org/en/19777*.

5 Government of Pakistan. 2021. "Updated Nationally Determined Contributions 2021." *https://unfccc.int/sites/default/files/NDC/2022-06/Pakistan%20Updated%20NDC%202021.pdf*.

6 Government of Pakistan. 2021. "Updated Nationally Determined Contributions 2021." *https://unfccc.int/sites/default/files/NDC/2022-06/Pakistan%20Updated%20NDC%202021.pdf*.

7 World Weather Attribution. 2022. "Climate Change Likely Increased Extreme Monsoon Rainfall, Flooding Highly Vulnerable Communities in Pakistan." *https://www.worldweatherattribution.org/wp-content/uploads/Pakistan-floods-scientific-report.pdf* .

8 Pakistan Meteorological Department. 2022. "Pakistan's Monthly Climate Summary: August 2022." Government of Pakistan. *http://www.pmd.gov.pk/cdpc/Pakistan_Monthly_Climate_Summary_August_2022.pdf*.

While the underlying drivers of the disaster impacts are not limited to climate change, the scale of the flooding is unprecedented. Following the 2010 floods, which affected 20 million people, Pakistan invested in disaster risk management. The country had taken critical steps to develop its long-term policies, including the National Disaster Management Plan and National Flood Protection Plan IV. However, challenges persisted, such as lack of operationalization and financing for the plans, and limited absorptive capacity to utilize risk assessments in infrastructure investments and land use planning. At the start of the 2022 monsoon season, the NDMA undertook a comprehensive Monsoon Contingency Planning Exercise, which included major federal and provincial stakeholders, as well as the international community. However, Pakistan's systems and institutions were not adequately equipped for the unprecedented scale of the climate-induced disaster. The 2022 flooding has further exposed underlying institutional and systemic challenges, including poor urban planning and water resource management, lack of systems for infrastructure maintenance, complex governance, structural inequalities, and limited disaster risk reduction capacity. Simultaneous multiple shocks, including natural hazards, COVID-19, rising inflation, an energy crisis, and fiscal challenges, continue to compound the impacts. Underlying political and economic instability are exacerbating the disaster impacts and undermining the effectiveness of recovery. A more resilient nation is critical to breaking the cycle of disaster-induced poverty.

## Humanitarian Response to Recovery and Reconstruction

The scale and prolonged period of the ongoing disaster requires strategic coordination to effectively link and transition from humanitarian response to recovery. The humanitarian response has been led by the Government of Pakistan, which established a National Flood Response and Coordination Centre (NFRCC) to oversee the national response to the monsoon rains and floods. The NFRCC comprises representatives of federal stakeholders, provincial governments, and the Pakistan Armed Forces. National-level government assistance is organized through the NFRCC. The Armed Forces and civil administration have been providing search and rescue, logistics, and engineering support, while the NDMA is procuring relief supplies and coordinating bilateral in-kind donations for distribution through the Army, which has been mobilized under constitutional provisions.[9]

Relief efforts have largely focused on the provision of shelter, safe drinking water, food items, and health interventions amidst supply chain disruptions. On August 19, the government launched a PKR 37.2 billion flood relief cash program for 1.5 million affected families. On August 30, the Government of Pakistan and the United Nations jointly launched the 2022 Pakistan Floods Response Plan (FRP), which highlighted the main humanitarian needs and outlined an action plan to respond to the immediate needs of the people. A Revised FRP was released on October 4, appealing for US$816 million to cover the most urgent needs of 9.5 million people. However, as of October 21, only 13.7 percent of the requested amount has been funded.[10] The international community and local and international organizations have provided aid, but accessibility due to standing flood waters, flood effects, and complex topographies remain a major challenge. The Asian Development Bank (ADB), the European Union (EU), the United Nations (UN), and the World Bank (WB) have supported the Government of Pakistan to conduct this Post-Disaster Needs Assessment (PDNA) to provide an initial estimate of damage, loss, and recovery and reconstruction needs from the disaster.

9 Government of Pakistan and United Nation's Office for the Coordination of Humanitarian Affairs. 2022. "Revised 2022 Flood Response Plan:Pakistan." *https://reliefweb.int/report/pakistan/revised-pakistan-2022-floods-response-plan-01-sep-2022-31-may-2023-issued-04-oct-2022?_gl=1*zi5z3w*_ga*MjIxMzMyMjcyLjE2NjQ4NTg0Nzc.*_ga_E60ZNX2F68*MTY2NjE5NzE5Ny44LjAuMTY2NjE5NzE5Ny42MC4wLjA*.*

10 Financial Tracking Service- UNOCHA, 2022. "Pakistan Floods Relief Plan." *https://fts.unocha.org/multiyear/2313/summary*

# Summary of Damage, Loss, and Needs[11]

The total damage is estimated at PKR 3.2 trillion (US$14.9 billion), total loss at PKR 3.3 trillion (US$15.2 billion), and total needs at PKR 3.5 trillion (US$16.3 billion). The sectors that suffered the most damage are housing at PKR 1.2 trillion (US$5.6 billion); agriculture, food, livestock, and fisheries at PKR 800 billion (US$3.7 billion); and transport and communications at PKR 701 billion (US$3.3 billion). The transport and communications sector has the highest reconstruction and recovery needs at PKR 1.1 trillion (US$5.0 billion); followed by agriculture, food, livestock, and fisheries at PKR 854 billion (US$4.0 billion), and housing at PKR 592 billion (US$2.8 billion). The provinces of Sindh and Balochistan account for approximately 50 percent and 15 percent of recovery and reconstruction needs, respectively.

## TABLE 1. DAMAGE, LOSS, AND NEEDS BY REGION

| | Damage | | Loss | | Needs | |
|---|---|---|---|---|---|---|
| **Region** | **(Billion PKR)** | **(Million US$)** | **(Billion PKR)** | **(Million US$)** | **(Billion PKR)** | **(Million US$)** |
| Balochistan | 349 | 1,625 | 541 | 2,516 | 491 | 2,286 |
| Khyber Pakhtunkhwa | 201 | 935 | 141 | 658 | 168 | 780 |
| Punjab | 111 | 515 | 122 | 566 | 160 | 746 |
| Sindh | 1,948 | 9,068 | 2,444 | 11,376 | 1,688 | 7,860 |
| Cross-Provincial[12] | 587 | 2,731 | 14 | 67 | 975 | 4,540 |
| Special Regions[13] | 7 | 32 | 11 | 49 | 10 | 48 |
| **Grand Total** | **3,202** | **14,906** | **3,272** | **15,233** | **3,493** | **16,261** |

Note: All estimates in this report were calculated in PKR and converted to US$ prior to rounding (US$1 = 214.8 PKR on average between June and September 2022). The costs are initial estimates and variances may exist due to limitations such as data access due to ongoing flooding and lack of baseline information. Precise numbers before rounding are provided in the sector assessment reports in the Supplemental Report, published separately.

While the needs estimate accounts for a build back better premium, it does not comprehensively include new and broader investments needed to strengthen Pakistan's adaptation to climate change and overall resilience to future climate shocks, or reconstruction needs of affected private entities.

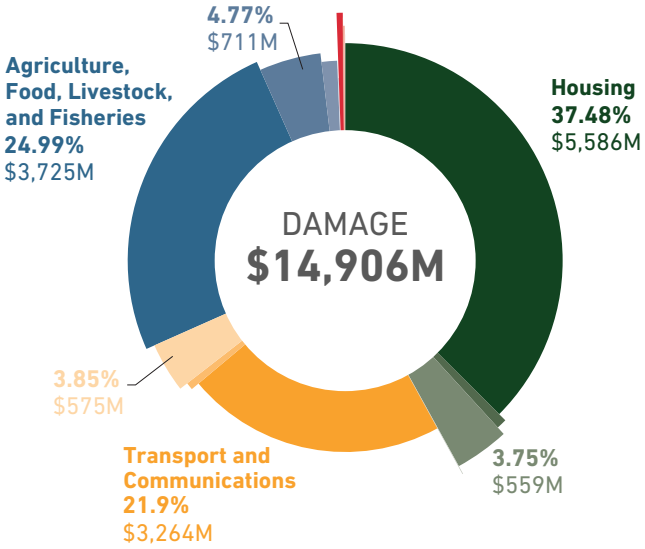
11 **Damage** is defined as direct costs of destroyed or damaged physical assets. It is valued in monetary terms with costs estimated based on replacing or repairing physical assets and infrastructure, considering the replacement price prevailing before the crisis. **Loss** is defined as changes in economic flows resulting from the disaster and valued in monetary terms. Together, damage and loss constitute the effects of the crisis. **Needs** costing draws on the monetary value of damage and loss but is not equal to the sum of those estimates. Recovery and reconstruction needs are calculated in terms of replacement costs according to current prices and include a premium linked to building-back-better principles, and needs associated with the recovery of the sector. The reconstruction and recovery needs include short (up to 12 months) and intermediate to long-term (up to five years) activities.

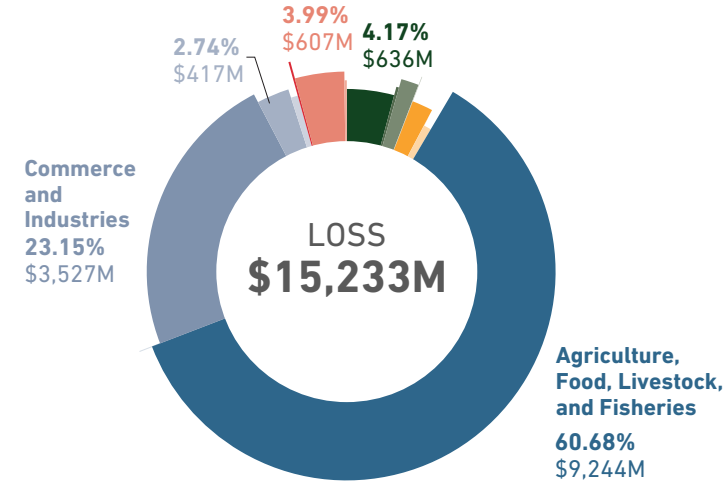
12 Cross-provincial includes assets that affect more than one province or are calculated at the national level (e.g. railways, roads, telecommunications, etc.). The classification is in line with the public budget.

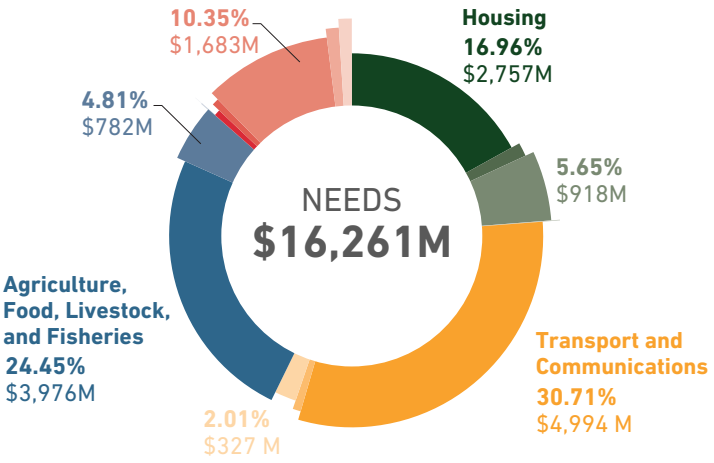
13 Special regions include districts outside of the four main provinces that have been affected by the floods and declared "calamity-hit."

## TABLE 2. DAMAGE, LOSS, AND NEEDS BY SECTOR GROUP AND SECTOR

| | Damage | | Loss | | Needs | |
|---|---|---|---|---|---|---|
| **Sectors** | **(Billion PKR)** | **(Million US$)** | **(Billion PKR)** | **(Million US$)** | **(Billion PKR)** | **(Million US$)** |
| **Social Sectors** | **1,345** | **6,261** | **193** | **896** | **832** | **3,872** |
| Housing | 1,200 | 5,586 | 137 | 636 | 592 | 2,757 |
| Health | 23 | 109 | 7 | 34 | 40 | 188 |
| Education | 120 | 559 | 47 | 219 | 197 | 918 |
| Culture and Heritage | 1 | 6 | 1 | 7 | 2 | 9 |
| **Infrastructure Sectors** | **843** | **3,927** | **85** | **396** | **1,168** | **5,437** |
| Transport and Communications | 701 | 3,264 | 60 | 281 | 1,073 | 4,994 |
| Energy | 19 | 88 | 1 | 3 | 25 | 117 |
| WASH, Municipal Services, and Community Infrastructure | 123 | 575 | 24 | 112 | 70 | 327 |
| **Productive Sectors** | **996** | **4,635** | **2,853** | **13,281** | **1,022** | **4,760** |
| Agriculture, Food, Livestock, and Fisheries | 800 | 3,725 | 1,986 | 9,244 | 854 | 3,976 |
| Water Resources and Irrigation | 153 | 711 | - | - | 168 | 782 |
| Commerce and Industries | 40 | 186 | 758 | 3,527 | - | - |
| Finance and Markets | 1 | 3 | 90 | 417 | - | - |
| Tourism | 2 | 10 | 20 | 93 | 0.4 | 2 |
| **Cross-Cutting Sectors** | **18** | **83** | **142** | **660** | **471** | **2,192** |
| Governance | 13 | 60 | 5 | 23 | 19 | 88 |
| Social Sustainability, Inclusion and Gender | 0.004 | 0.02 | - | - | 21 | 96 |
| Social Protection, Livelihoods, and Jobs | - | - | 130 | 607 | 361 | 1,683 |
| Environment and Climate Change | 4 | 18 | 6 | 30 | 35 | 164 |
| Disaster Risk Reduction and Resilience | 1 | 5 | - | - | 35 | 161 |
| **Grand Total** | **3,202** | **14,906** | **3,272** | **15,233** | **3,493** | **16,261** |




## FIGURE 2. DISTRIBUTION OF DAMAGE, LOSS, AND NEEDS BY SECTOR

**SOCIAL SECTORS**
- Housing
- Health
- Education
- Culture and Heritage

**INFRASTRUCTURE SECTORS**
- Transport and Communications
- Energy
- WASH, Municipal Services, and Community Infrastructure

**PRODUCTIVE SECTORS**
- Agriculture, Food, Livestock, and Fisheries
- Water Resources and Irrigation
- Commerce and Industries
- Finance and Markets
- Tourism

**CROSS-CUTTING SECTORS**
- Governance
- Social Sustainability, Inclusion and Gender
- Social Protection, Livelihoods, and Jobs
- Environment and Climate Change
- Disaster Risk Reduction and Resilience

# Macroeconomic and Human Impact: A Cascading Crisis

The floods are expected to have a substantial negative impact on Pakistan's economy. Overall damages are estimated at PKR 3.2 trillion (US$14.9 billion), equivalent to 4.8 percent of fiscal year (FY)22 gross domestic product (GDP).[14] Among the economic sectors, the agriculture and industry sectors are estimated to each incur around one-quarter of the damages, and the services sector is bearing close to half of the total damages. Recovery and reconstruction needs are projected to be sizable at 1.6 times the budgeted national development expenditure for FY23.[15]

Economic activity has been disrupted, livelihoods have been severely impacted, with poverty expected to increase significantly. The size and duration of shocks will vary across locations and households depending on the intensity of the flooding and the time it takes for the water to recede, their existing socioeconomic status, as well as the quality and speed of relief and reconstruction efforts. Even in the best-case scenario, reversing these negative shocks to household welfare will take considerable time, and some losses, such as losses to human capital and loss of land productivity, could set in motion more durable declines in welfare and will require specific attention. The government is providing immediate relief to the impacted communities and supporting the early recovery, while aiming to ensure macroeconomic stability and fiscal sustainability. Moving forward, as recovery and reconstruction spending rises, the loss in output could be mitigated. Yet, significant international support will be needed to complement Pakistan's own commitment to increase domestic revenue mobilization and save scarce public resources, and to reduce the risk of exacerbating macroeconomic imbalances. Evidence from previous natural hazards in Pakistan suggests that economic impacts may persist for an extended period, with damage to the productive capacity of the economy reducing growth prospects over the medium term.

Overall decline in GDP as a direct impact of the floods is projected to be around 2.2 percent of FY22 GDP.[16] Among the major sectors, agriculture sector value added is projected to decline the most at 0.9 percent of FY22 GDP, with floods causing the most losses to cotton, dates, sugarcane, and rice crops. Around 1 million livestock are estimated to have perished. Furthermore, damage in the agricultural sector is expected to have spillover effects on the industry and services sectors. Flood-related cotton losses are expected to weigh on the domestic textile industry, as local cotton constitutes about half of the industry's required cotton input. Textiles account for around one-quarter of total industry output and more than half of goods exports. Similarly, the local food processing and slaughtering industries will be negatively impacted by the expected reduction in food harvests and reduced supply of livestock. Industry sector value added is consequently expected to shrink by 0.7 percent of FY22 GDP. Similarly, lower agricultural and industrial activity are likely to weigh on wholesale and transportation services activities, which account for around half of the service sector output. In addition, transportation challenges arising from the loss of critical infrastructure, such as roads and bridges, are expected to disrupt supply and further dampen overall economic activity. Services sector value added is consequently projected to decline by 0.6 percent of FY22 GDP.

14 GDP at market prices at current prices for FY22 (PKR 66.9 trillion).
15 According to the FY23 Federal Budget, the total national Public Sector Development Programme allocation is PKR 2,158 billion.
16 Nominal GDP at market prices for FY22 (PKR 66.9 trillion).

The disaster will have profound impact on lives and livelihoods. Preliminary estimates of the PDNA suggest that the national poverty rate will increase by 3.7 to 4.0 percentage points, pushing between 8.4 and 9.1 million people into poverty, as a direct consequence of the floods. Similarly, multidimensional poverty will increase by 5.9 percentage points, meaning that an additional 1.9 million households will be pushed into non-monetary poverty. Beyond the national average, poverty in Sindh would increase by between 8.9 and 9.7 percentage points, and in Balochistan by between 7.5 and 7.7 percentage points. Moreover, the depth and severity of poverty will increase for households that were already poor prior to the floods. The poverty gap has substantially increased, with the number of extremely poor people living more than 20 percent below the poverty line increasing from 18 to 25–26 million. The impact on household welfare will come through at least four channels: (i) loss of household income and employment/livelihoods due to destroyed harvest, killed livestock, or inactivity of businesses; (ii) loss of assets, including homes, livestock, productive equipment, and household durables; (iii) rising food prices due to shortages of food arising from lost food stocks and poor harvests; and (iv) loss of human capital, given the significant threat of disease outbreaks and food shortages, and prolonged school closures, with attendant learning losses.

Even prior to the flooding, many of the calamity-hit districts showed higher monetary and non-monetary deprivations, especially among households in rural areas. Nineteen of the 25 poorest districts in the country were calamity-affected. Moreover, higher stunting rates in these districts undermined progress toward better development outcomes.[17] Households in calamity-hit districts were more impoverished than the national average (31.2 percent compared to 21.9 percent), and poverty rates for many flood-affected districts in Sindh and Balochistan were much higher. For instance, district-level poverty rates for calamity-hit districts in Balochistan ranged from 26.3 percent in Kohlu to 75.8 percent in Khuzdar; and in Sindh, from 15 percent in Hyderabad to 53.4 percent in Badin.

Reversing these negative shocks to household welfare will take considerable time, and losses to human capital and land productivity can set in motion more durable declines in welfare. The impact of the floods is likely to exacerbate already existing inequalities, revealing serious differences in safety, education, decision-making, and employment. Vulnerable groups, such as women, children, people with disabilities, and refugees, are likely to be disproportionally affected by the floods due to their limited access and availability to social protection and coping mechanisms.

17 Based on survey-based estimates for the PDNA. Given restrictions in data access, the analysis only describes outcomes for 75 calamity-hit districts in Punjab, KP, Sindh, and Balochistan.

# Next Steps: Pakistan's Resilient Recovery Strategy

The catastrophic floods are a wake-up call for systemic changes to address the underlying vulnerabilities to natural hazards and their intersection with other shocks. At this critical point, swift action is necessary for a paradigm shift to build systemic resilience to natural hazards in development planning and asset management. This requires a participatory and inclusive approach, bringing together civil society, government, private sector, academia, think tanks, and the international community around a common vision. Stakeholder engagement will be necessary to inform the scope, design, institutional arrangements, and a monitoring and accountability framework for a comprehensive resilient recovery program. Such a program should prioritize the urgent needs of the affected population while ensuring that results are delivered in an efficient, equitable, and transparent manner. Building on global good practices of recovery and integrating the specific socioeconomic, cultural, and institutional context of Pakistan through a people-centric approach will be crucial.

## Disaster Recovery Framework

The vision of Pakistan's recovery framework is to achieve an inclusive and resilient recovery through a "Whole of Pakistan" approach, leading to sustainable development for the people and country. This vision rests on three key pillars and an underlying foundation. The strategic recovery objectives of the framework and guiding principles of the vision, articulated below, will be critical. The underlying foundation is comprised of three approaches—(i) build back better; (ii) people-centered socioeconomic recovery; and (iii) developing systemic resilience against natural hazards and climate change impacts—all of which must be applied across the board. Built on this foundation are three pillars: (i) restoration of jobs and livelihoods; (ii) recovery and reconstruction of critical assets, services, and infrastructure; and (iii) strengthening governance and stakeholder capacity for reconstruction, especially communities.

## Recovery and Reconstruction Objectives

The strategic recovery pillars noted above will be supported by five strategic recovery objectives:

- Enhancing governance and capacities of the state to restore lives and livelihoods of the affected people, especially the most vulnerable.
- Restoring livelihoods and economic opportunities.
- Ensuring social inclusion and participation in all aspects of recovery and related development.
- Restoring and improving basic services and physical infrastructure in a resilient and sustainable manner.
- Developing an enabling environment and facilitating private sector participation and financing.

## Guiding Principles to Support the Vision

The following guiding principles will be critical to ensure recovery and reconstruction efforts take a consistent approach:

- Participatory, inclusive, and green recovery for long-term resilience.
- Pro-poor, pro-vulnerable, and gender sensitive, targeting the most affected.
- Coordination of government tiers through centralized policy, planning, and coordination; and decentralized implementation.
- Invest in nature-based solutions and ecosystem-based adaptation measures.
- Conflict-sensitive implementation.
- Prioritize institutional and regulatory reforms to ensure sustainability.
- Use of local materials, knowledge, skills, and labor.
- Avoid relocation as much as possible.
- Balance between public and private sector recovery.
- Emphasis of synergies between humanitarian effort and recovery.

## Next Steps

Strategic prioritization of interventions across all sectors is the crucial next step toward finalizing the recovery framework. The framework will provide guidance on how the PDNA recommendations[18] will be operationalized by prioritizing the most affected sectors and interventions in the immediate and short term (up to 12 months) and linking them with the medium to longer-term recovery and reconstruction needs. Further work will involve prioritizing needs based on criteria such as urgency, institutional capacity, and financing feasibility. Institutional arrangements, financing plans, and detailed recovery action plans must be developed. The recovery and reconstruction should prioritize the urgent needs of the affected population and ensure an efficient, equitable, coordinated, and transparent delivery led by the government and supported by the international community. Although the focus will be on the affected areas, the creation of the recovery framework presents an opportunity to systematically embed resilience to natural hazards and climate change in Pakistan's development planning—a turning point on how the country continues its growth. Transformational action will be critically important to achieve the vision of an inclusive and resilient recovery through a "Whole of Pakistan" approach, leading to sustainable development for the people and country.

18 The recommendations can be found in the Supplemental Report, a companion report which will be published separately and includes detailed sectoral analyses.

Photo credit: UNDP

# Key Facts

Led by the Government of Pakistan and supported by the Asian Development Bank, the European Union, the United Nations, and the World Bank, the PDNA provides an initial estimate of damages, losses, and needs resulting from the disaster.

## OBJECTIVES

The objectives of the PDNA are to:

- assess the impact of the disaster on the population, physical assets, and service delivery;
- conduct a preliminary estimate of infrastructure reconstruction and service delivery restoration needs in the short, medium, and long term; and
- contribute to a resilient recovery and reconstruction strategy and a coordinated national and international effort for building back better.

## DATA SOURCES AND METHODOLOGY

The analysis blended ground-based data and remotely collected data, relying on cutting-edge remote-sensing technology to reach inaccessible areas and corroborate information. Various sources were used to triangulate and improve the veracity of the data. Ground-based data was provided from provincial governments and ministries, and remote data was collected through high resolution satellite imagery, synthetic aperture radar (SAR), publicly available data, and international organizations. Data was analyzed using geospatial data layers and crowd-sourced and open-sourced mapping platforms. The government and international partners hosted Stakeholder Engagement Meetings to validate the data and ensure the humanitarian response is linked with the recovery process. The PDNA adapts from the Post-Disaster Needs Assessment methodology jointly developed by the EU, the World Bank Group (WBG), and the UN.

## SCOPE

### GEOGRAPHIC SCOPE:

The geographic coverage of the assessment is limited to 94 calamity-hit districts as of October 11 across the four provinces of Balochistan, KP, Punjab, and Sindh. The analysis also includes estimates for special regions and at a cross-provincial level.[19]

### SECTORAL SCOPE:

In addition to a macroeconomic and human impact analysis, the assessment includes 17 sectors, grouped across four thematic areas:

**Social:** Housing; Health; Education; Culture and Heritage.

**Infrastructure:** Transport and Communications; Energy; Water, Sanitation, and Hygiene (WASH), Municipal Services, and Community Infrastructure.

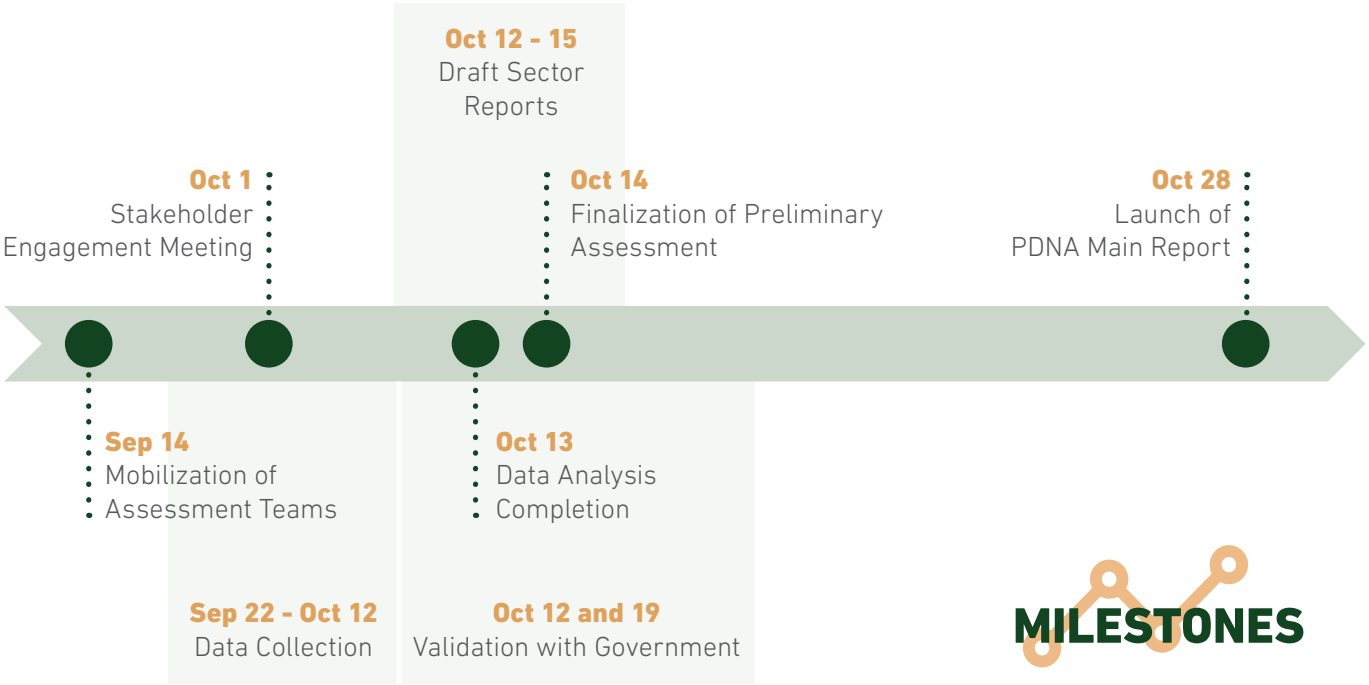
**Productive:** Agriculture, Food, Livestock, and Fisheries; Water Resources and Irrigation; Commerce and Industries; Finance and Markets; and Tourism.

**Cross-cutting:** Governance; Social Sustainability, Inclusion, and Gender; Social Protection, Livelihoods, and Jobs; Environment and Climate Change; Disaster Risk Reduction and Resilience.

### TEMPORAL SCOPE:

The PDNA analyses and recommendations only focus on the impact and the recovery and reconstruction needs as a result of the flooding. Damage, loss, and needs calculations were therefore made relative to a pre-flood baseline. The data was collected from September to mid-October 2022.

19 Special regions include districts outside of the four main provinces that have been affected by the floods and declared "calamity-hit." Cross-provincial includes assets that affect more than one province or are calculated at the national level (e.g., railways, roads, telecommunications).




## MILESTONES

## KEY FINDINGS

### DAMAGE

**3.2 PKR trillion**

**(US$ 14.9 billion)**

with housing; agriculture, food, livestock, and fisheries; and transport and communication sectors most severely affected.

### LOSS

**3.3 PKR trillion**

**(US$ 15.2 billion)**

with agriculture, food, livestock, and fisheries suffering the most losses, followed by commerce and industries; and social protection, livelihoods, and jobs sectors.

### RECOVERY AND RECONSTRUCTION NEEDS

**3.5 PKR trillion**

**(US$ 16.3 billion)**

with transport and communication; agriculture, food, livestock, and fisheries; and housing sectors being the highest, respectively.

## IMPACT ON ECONOMY

- **Extensive damage** in agriculture, industry, and service sectors, estimated to be equivalent to 4.8 percent of FY22 GDP.
- **Significant losses in GDP** as a direct impact of the floods, projected to be around 2.2 percent in FY22, with agriculture accounting for the largest decline at 0.9 percent.
- **Unprecedented recovery and reconstruction needs** projected at 1.6 times the budgeted national development expenditure for FY23.
- **Widening effect on primary and overall fiscal deficits.**
- **Rising prices of food and essential items.**
- **Higher poverty rates,** with national poverty rate estimated to increase by 3.7 to 4.0 percentage points, pushing between 8.4 and 9.1 million people into poverty.

# 1. Post-Disaster Needs Assessment

Photo credit: UNDP

# Objectives, Approach, and Scope

The Pakistan PDNA assesses the impact of the floods on the population, physical assets, and service delivery in 94 calamity-hit districts across Pakistan between June and October 2022. It provides a preliminary estimate of infrastructure reconstruction and service delivery restoration needs in the short, medium, and long term. Moreover, the PDNA will serve as the foundation for future analytical assessments and reports, including a resilient recovery and reconstruction strategy and a coordinated national and international effort for building back a more resilient Pakistan.

The PDNA follows a globally established and recognized damage, loss, and needs assessment methodology jointly developed by the EU, the WBG, and the UN. This methodology has been applied globally in post-disaster and conflict contexts to inform recovery and reconstruction planning. In the case of Pakistan, the PDNA approach explicitly includes opportunities to build back better and smarter guided by principles of inclusion, resilience, and sustainability.

The PDNA is structured as two reports: the (i) Main Report, including estimations on damage, loss, and needs, methodology overview, resilient recovery strategy, macroeconomic and human impacts, and a summary of sector assessments; and the (ii) Supplemental Report, including full sector assessment reports, detailed methodology, as well as a full list of contributors and credits.

**Geographic Scope:** The geographic coverage of the assessment is limited to 94 calamity-hit districts across the four provinces of Balochistan, KP, Punjab, and Sindh. The analysis also includes estimates for special regions and at a cross-provincial level.

**Sectoral Scope:** In addition to a macroeconomic and human impact analysis, the assessment includes 17 sectors, grouped across four thematic areas:

- **Social:** Housing; Health; Education; Culture and Heritage.
- **Infrastructure:** Transport and Communications; Energy; Water, Sanitation, and Hygiene (WASH), Municipal Services, and Community Infrastructure.
- **Productive:** Agriculture, Food, Livestock, and Fisheries; Water Resources and Irrigation; Commerce and Industries; Finance and Markets; and Tourism.
- **Cross-cutting:** Governance; Social Sustainability, Inclusion, and Gender; Social Protection, Livelihoods, and Jobs; Environment and Climate Change; Disaster Risk Reduction and Resilience.

**Temporal Scope:** The PDNA analyses and recommendations only focus on the impact and the recovery and reconstruction needs as a result of the flooding. Damage, loss, and needs calculations were therefore made relative to a pre-flood baseline. The data was collected from September to mid-October 2022.

# Methodology

The PDNA assesses (i) damage; (ii) loss; and (iii) the recovery and reconstruction needs. The quantitative results and qualitative analysis of all three were utilized to assess the macroeconomic and human impact.

A core team comprising of individuals from the ADB, EU, UN, and WBG coordinated the assessment with the Ministry of Planning Development and Special Initiatives (MoPDSI) at the federal level. The MoPDSI facilitated the provision of primary damage data through relevant federal and provincial entities. Under the PDNA methodology, all secondary data received from the MoPDSI was validated through several measures including remote-sensing and analysis through SAR and visual imagery, triangulation across affected districts and sectors, desk review, existing reports and consultations with the stakeholders, and limited field damage inspection. Based on the above, analytical work was undertaken by sector teams for a comparative pre- and post-disaster assessment of the infrastructure and services affected, which is summarized in Section 5. The summaries provide the damage, loss, and needs for each sector covered in this assessment. However, not every sector reported an estimate for each category due to the nature of the sector, variations in impact, and data availability.

The PDNA uses the following key definitions, which are described in greater detail in the annex of the Supplemental Report.

Damage is defined as direct costs of destroyed or damaged physical assets. It is valued in monetary terms and costs are estimated based on replacing or repairing physical assets and infrastructure, considering the replacement price prevailing before the crisis.

Based on the reported damage level, each asset was assigned a physical damage status based on three classifications: no damage; partially damaged (less than 40 percent of the asset is damaged); or completely destroyed (more than 40 percent of the asset is damaged, or the damage is structural). For the damage estimation, the average was calculated based on the number of damaged facilities, their physical

status (partially damaged or completely destroyed), and the estimated pre-crisis unit cost associated with each asset class.

Loss is defined as changes in economic flows resulting from the disaster andit is valued in monetary terms. Together damage and loss constitute the "effects" of the crisis.

Typical loss includes the decline in output in productive sectors and the lower revenues and higher operational costs in the provision of services (e.g., social or infrastructure sectors). They also include unexpected expenditures to meet immediate needs (e.g., the cost for additional doctors, teachers, vaccination campaigns, rubble removal, temporary shelters).

Recovery and Reconstruction Needs costing draws on the monetary value of damage and loss, but they are not equal to the sum of those estimates. Recovery and reconstruction needs are calculated in terms of replacement costs according to current prices and include a premium linked to building-back-better principles (such as improved energy efficiency, modernization efforts, and sustainability standards) and needs associated with the recovery of the sector. Recovery needs take into account "softer" or non-infrastructure-related aspects, such as staffing, equipment, or materials required to bring assets and services back to the pre-crisis level. Needs also consider issues such as global inflation, surge pricing due to volume of construction materials, and higher insurance. The reconstruction and recovery needs include short (up to 12 months) and intermediate to long-term (up to five years) activities. While the needs estimate accounts for a build back better premium, it does not comprehensively include new and broader investments needed to strengthen Pakistan's adaptation to climate change and overall resilience to future climate shocks, or reconstruction needs of affected private entities.

# Stakeholder Engagement

A "Whole of Pakistan" approach was adopted for the PDNA, in which the team engaged with representatives and stakeholders from distinct spheres of Pakistani society. These engagements included a variety of individuals from national and local government authorities, UN agencies, local and international non-governmental organizations (NGOs), civil society organizations (CSOs), the private sector, youth organizations, academia, and donor agencies. This approach helped to inform the PDNA's findings, analyses, and recommendations on the emerging needs and priorities of the affected population and the resilient recovery strategy presented in this report. Special attention was made to include stakeholders actively involved in the process of assessing damage, providing aid, and rehabilitating Pakistan. To stimulate discussion, smaller sector-specific breakout sessions were held after the plenary session to discuss technical details with stakeholders.

The virtual Stakeholder Engagement Meetings, held on October 1 and organized by the Government of Pakistan and facilitated by core international partners, aimed to provide a platform for a participatory and inclusive process. The focus of these discussion extended beyond the humanitarian phase to include the linkages with the recovery phase. Stakeholders were asked to share their insights from the ground, including current relief activities, and priority recovery and reconstruction needs and suggestions for implementation of the identified sequenced priorities. Participants from CSOs across Pakistan provided

feedback on the impact of the crisis, ongoing humanitarian and recovery activities, and future priority recovery and reconstruction needs in the short, medium, and long term. Sector-specific conversations were structured around three key questions:

- What humanitarian activities are currently ongoing in your sector that could be linked with future activities to support longer-term recovery?
- What are the key priorities needed to promote recovery and restore services and livelihoods in your sector in the short, medium, and long term?
- Suggestions for implementing the above considering the challenges as a result of the floods (capacity, supply, and other constraints, etc.)?

The priority areas identified for recovery include supporting affected livelihoods; developing low-cost solutions to quickly restore community-based and inclusive infrastructure, including shelter; administering critical healthcare to flood-affected communities, especially to women; and employing nature-based solutions where possible to improve future preparedness. Stakeholders highlighted the need for community representation in relief, recovery, and rebuilding discussions, and for the data collected and recovery plans formulated by CSOs to be consolidated by the government.

With respect to longer-term recovery, stakeholders from different sectors emphasized that ongoing initiatives should be scaled up to support the recovery of vulnerable communities. This includes measures such as low-cost, high-yield seeds in the agriculture sector; clean drinking water and sanitation; and community-based, resilient infrastructure. Recovery should be carried out in a way that is inclusive of marginalized groups, including women, persons with disabilities, and religious minorities.

Stakeholders agreed that there are significant challenges to recovery, of which financing was deemed the foremost, given the scale and intensity of the damage. Some areas were also inundated for weeks after the floods, hindering access to relief efforts and data collection. Stakeholders also highlighted the need to tailor recovery and reconstruction strategies to different regions and contexts, utilizing indigenous knowledge and integrating multi-hazard resilient repair and reconstruction to build back better. There was also consensus surrounding promoting effective policies and enforcing regulations; building the capacities of government and non-government bodies to adopt climate-smart interventions; and raising community awareness about disasters and climate risks to bolster longer-term preparedness. Concerns were also raised about areas with existing development deficits where infrastructure and services would have to be established anew; a lack of mandatory contingency stocks; and the absence of baseline data for several areas.

# Limitations and Assumptions

## Limitations

The below challenges were mitigated as much as possible through the design of the assessment methodology and close cooperation between government authorities, international organizations, CSOs, and private sector institutions.

**Data Availability:** Some areas were still submerged during the assessment period, which limited the accuracy of data collection for certain sectors. The extent of the impact of the flooding was therefore not fully ascertained in those areas. While certain remote-sensing tools such as SAR were able to bypass this limitation, it was not utilized for every sector. However, the findings are not expected to increase significantly over time for most sectors.

**Lack of Baseline Information:** The absence of baseline information at the district level was a challenge for certain sectors, making it difficult to systematically assess the effects of the disaster on sectors and services. The PDNA addresses this by collecting data from various sources, including population and census data, to formulate a baseline for each sector against which more recent data may be compared.

**Data Disaggregation:** This report does not include gender disaggregated data or data disaggregated with respect to demographics due to unavailability of such data for this rapid assessment. It is nonetheless important to highlight that the disaster has created different challenges for recovery and access to services for women and girls.

## Assumptions

Some specific assumptions are made for the purpose of this assessment:

- Damage, loss, and needs are presented in PKR and US dollars. The exchange rate of US$1 = PKR 214.8 is used throughout the report.[20]
- The PDNA is broad-brush in nature and not intended as a substitute for in-depth, sector-level assessments which would be required for future recovery projects.
- The PDNA assessment methodology is time-bound; however, damage, loss, and needs may be higher than what is reported in the PDNA as certain areas are still inundated with water and the full extent of the impact in those select areas is yet to be determined. However, the PDNA provides an estimate on infrastructure and service delivery and the findings are not expected to increase significantly over time.
- The geographic and sectoral distribution were selected in coordination with the Government of Pakistan and international partners based on areas and sectors that were most impacted. This does not suggest that other areas or sectors were unaffected by the flooding.

20 The average exchange rate of the State Bank of Pakistan of the first working day from June to September.

# 2. Building Back Better for a Resilient Pakistan

Photo credit: UNDP

# Introduction

The floods of 2022 have devastated people's lives, assets, and livelihoods on an unprecedented scale. The disaster was triggered by the heaviest and most concentrated monsoon rains ever recorded in the country. Around 33 million people—one in seven—have been affected, including nearly 8 million displaced. An estimated 15 million people remain directly exposed or close to flood areas. The floods have taken the lives of more than 1,700 people, one-third of which were children. As of October 11, 94 districts were declared as "calamity hit" by government authorities, which amounts to more than half of all districts in the country. The majority are in the provinces of Balochistan, Sindh, and KP.

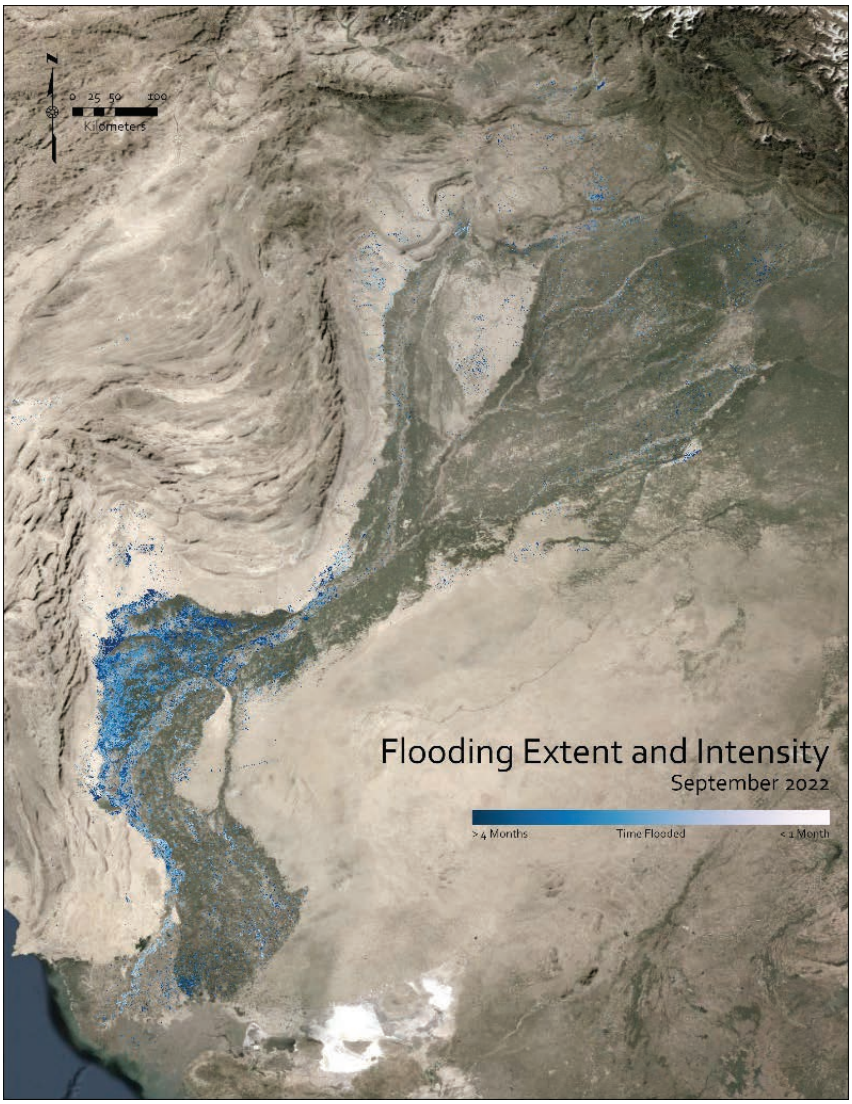
## An Unprecedented Climate-induced Disaster

Pakistan's high vulnerability to climate change is a risk multiplier, compounding its human and economic development challenges. Pakistan ranks among the top 10 countries worldwide most affected by climate change.[21] Extreme weather events have been increasing in frequency and intensity, impacting ecosystems, people, settlements, and infrastructure. The country is increasingly exposed and vulnerable to various natural hazards, particularly floods, tropical cyclones, droughts, landslides, and earthquakes. The ND-Gain Index has ranked Pakistan as the 39th most vulnerable country and the 27th least ready country in the world to address the impacts of climate change.[22] The poor are the most vulnerable as they are the most reliant on agriculture, livestock, fisheries, forests, and groundwater, which are now heavily degraded. They are further most directly impacted by natural hazards and the slow onset of climate change.[23]

21 Eckstein, David, Vera Künzel, and Laura Schäfer. 2021. "Global Climate Risk Index 2021." Germanwatch Briefing Paper. *https://www.germanwatch.org/en/19777.*
22 ND-GAIN Index (dataset). "Pakistan." *https://gain-new.crc.nd.edu/country/pakistan.*
23 Government of Pakistan. 2021. "Updated Nationally Determined Contributions 2021." *https://unfccc.int/sites/default/files/NDC/2022-06/Pakistan%20Updated%20NDC%202021.pdf.*

In the summer of 2022, the country experienced its wettest August since 1961. Shortly after a record heatwave and drought emergency, Sindh and Balochistan provinces were subject to unprecedented rainfall, surpassing average monthly totals by six and seven times, respectively.[24] Attribution research has shown that the five-day maximum rainfall, which is a measure of heavy precipitation, of these two provinces was around 75 percent more intense than it would have been had the climate not warmed by 1.2°C.[25] Although further analysis is needed to understand the causes of the flood event, it is clear the simultaneous riverine, urban, and flash flooding culminated in an unprecedented disaster, inundating areas historically not prone to floods.

## FIGURE 3. MAP OF FLOODING EXTENT AND INTENSITY




Source: Ipsos Risk Analytics/World Bank, September 2022.

24 Pakistan Meteorological Department. 2022. "Pakistan's Monthly Climate Summary: August 2022." Government of Pakistan. *http://www.pmd.gov.pk/cdpc/Pakistan_Monthly_Climate_Summary_August_2022.pdf*.

25 World Weather Attribution. 2022. "Climate Change Likely Increased Extreme Monsoon Rainfall, Flooding Highly Vulnerable Communities in Pakistan." *https://www.worldweatherattribution.org/wp-content/uploads/Pakistan-floods-scientific-report.pdf*.

# A Compounding Crisis

The catastrophic flooding has triggered a cascade of crises and consequences are still unfolding. Crop and livestock loss, as well as displacement, have led to loss of livelihoods. Lost food stocks, poor harvests, and rising food prices will exacerbate food insecurity and nutrition outcomes. The prevalence of standing water, lack of safe drinking water, and limited access to sanitation and hygiene services are contributing to a rise in waterborne illnesses and further loss of lives. Prolonged school closures and lack of education access will have long-lasting impacts on learning outcomes. The extensive loss of livelihoods, assets, and human capital builds on existing disparities and will affect the most vulnerable and marginalized households, with disproportionate impacts on women and girls. The floods have also exacerbated long-standing structural weaknesses, posing risks to a sustained recovery. Ensuring macroeconomic stabilization while supporting relief and recovery is a complex challenge with worsening external conditions, including the rise of global commodity prices and interest rates.[26] Political stability is critical for a coherent and timely response. As climate change accelerates the severity and frequency of disasters, institutional reforms and investments must go beyond business as usual and build systemic resilience. If transformational measures are not taken for a resilient recovery, the disaster will have multi-generational impacts through the reduction of developmental gains.

# Government and International Response

The humanitarian response has been led by the Government of Pakistan, which established the NFRCC to oversee the national response to the monsoon rains and floods. The NFRCC comprises representatives of federal stakeholders, provincial governments, and the Pakistan Armed Forces. National-level government assistance is organized through the NFRCC. The Armed Forces and civil administration have been providing search and rescue and logistics and engineering support, while the National Disaster Management Agency is procuring relief supplies and coordinating bilateral in-kind donations for distribution through the Army, which has been mobilized under constitutional provisions.[27]

The humanitarian situation continued to deteriorate in August as heavy rains continued to cause flooding and landslides. On August 5, the Ministry of Foreign Affairs officially requested humanitarian assistance from the UN and international community. On August 19, the government launched a PKR 37.2 billion flood relief cash program for 1.5 million affected families. On August 30, the Government of Pakistan and the UN jointly launched the 2022 Pakistan FRP, which highlighted the main humanitarian needs and outlined an action plan to respond to the immediate needs of the people. On October 4, a Revised Pakistan FRP was

26 Details on the macroeconomic and human impact are detailed in Sections 3 and 4, respectively.

27 Government of Pakistan and United Nation's Office for the Coordination of Humanitarian Affairs. 2022. "Revised 2022 Flood Response Plan:Pakistan." *https://reliefweb.int/report/pakistan/revised-pakistan-2022-floods-response-plan-01-sep-2022-31-may-2023-issued-04-oct-2022?_gl=1*zi5z3w*_ga*MjIxMzMyMjcyLjE2NjQ4NTg0Nzc.*_ga_E60ZNX2F68*MTY2NjE5NzE5Ny44LjAuMTY2NjE5NzE5Ny42MC4wLjA.*

released, appealing for US$816 million to cover the most urgent needs of 9.5 million people. However, as of October 21, only 13.7 percent of the requested amount has been funded.

Relief efforts have largely focused on the provision of shelter, safe drinking water, food items, and health interventions amidst supply chain disruptions. The international community, as well as over 100 local and international organizations, have provided aid, but accessibility due to standing flood waters, flood effects, and complex topographies remain a major challenge. Although some areas have proceeded to an early recovery phase, the scale and prolonged period of the ongoing disaster requires strategic coordination to effectively link and transition from humanitarian response to recovery.

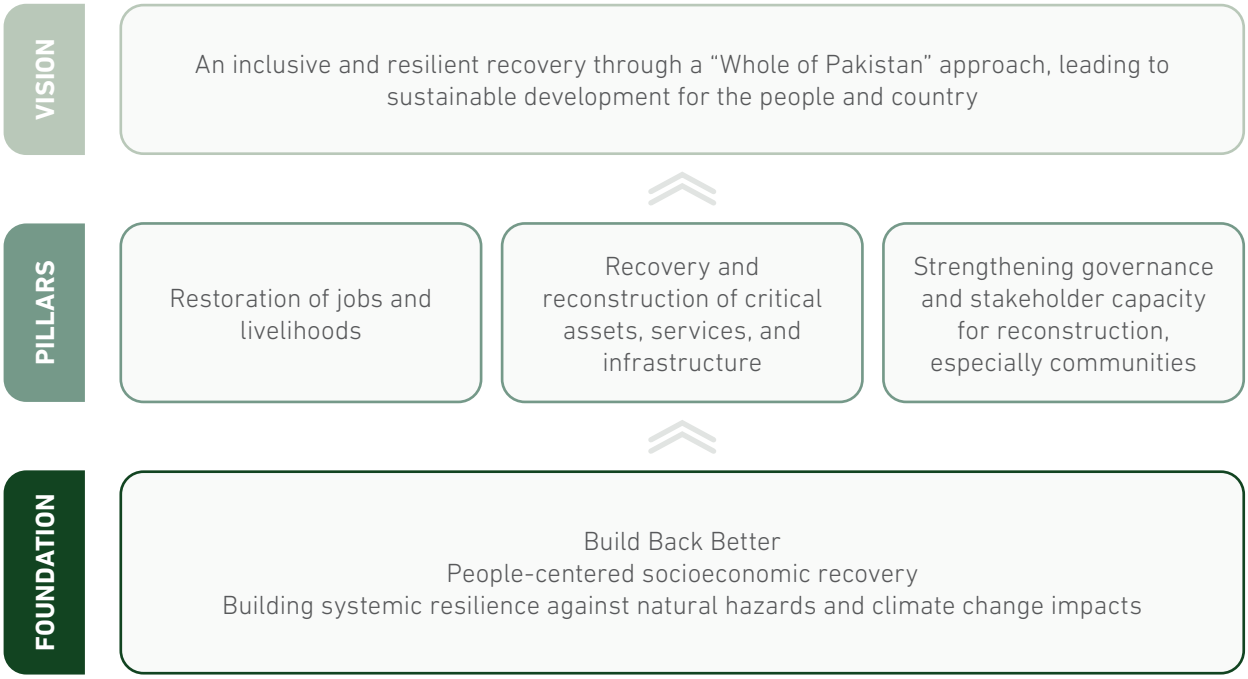
# Pakistan's Vision for a Resilient Recovery

The catastrophic floods are a wake-up call for systemic changes to address the underlying vulnerabilities to natural hazards and their intersection with other shocks. At this critical point, swift action is necessary for a paradigm shift to mainstream resilience to natural hazards in development planning and asset management. This requires a participatory and inclusive approach, bringing together civil society, government, private sector, academia, think tanks, and the international community around a common vision. The diaspora will also be critical considering their role in remittances and long-term foreign direct investments. Stakeholder engagement will therefore be necessary to inform the scope, design, institutional arrangements, and a monitoring and accountability framework for a comprehensive resilient recovery program. Such a program should prioritize the urgent needs of the affected population while ensuring that results are delivered in an efficient, equitable, and transparent manner. Building on global good practices of recovery and integrating the specific socioeconomic, cultural, and institutional context of Pakistan through a people-centric approach will be crucial.

## Disaster Recovery Framework

The vision rests on three key pillars and an underlying foundation. The strategic recovery objectives of the framework and guiding principles of the vision, articulated below, will be critical.

**FIGURE 4. RECOVERY AND RECONSTRUCTION VISION**




## Recovery and Reconstruction Objectives

The strategic recovery pillars will be supported by five strategic recovery objectives:

- Enhancing governance and capacities of the state to restore lives and livelihoods of the affected people, especially the most vulnerable.
- Restoring livelihoods and economic opportunities.
- Ensuring social inclusion and participation in all aspects of recovery and related development.
- Restoring and improving basic services and physical infrastructure in a resilient and sustainable manner.
- Developing an enabling environment and facilitating private sector participation and financing.

## Guiding Principles to Support the Vision

The following guiding principles will be critical to ensure recovery and reconstruction efforts take a consistent approach:

- Participatory, inclusive, and green recovery for long-term resilience.
- Pro-poor, pro-vulnerable, and gender sensitive, targeting the most affected.
- Coordination of government tiers through centralized policy, planning, and coordination; and decentralized implementation.
- Invest in nature-based solutions and ecosystem-based adaptation measures.
- Conflict-sensitive implementation.

- Prioritize institutional and regulatory reforms to ensure sustainability.
- Use of local materials, knowledge, skills, and labor.
- Avoid relocation as much as possible.
- Balance between public and private sector recovery.
- Emphasis of synergies between humanitarian effort and recovery.

## Next Steps

**Enabling Policies and Institutional Arrangements:** Two key steps are necessary in order to achieve the vision and objectives:: (i) the notification of enabling recovery policies; and (ii) the finalization of appropriate institutional and implementation arrangements. Sector-specific policies related to housing, agriculture, and livelihoods are urgently needed as recovery is already fragmented. The appropriate institutional and implementation arrangements should be based in good governance. The arrangements will need to include special provisions for strategic oversight and decision-making; coordination, management, and monitoring of operations; and transparency, accountability, and equity in resource allocation, especially for priority recovery interventions. Institutional arrangements will also need to include citizen engagement and ensure participation by civil society stakeholders.

The institutional and implementation arrangements are key to creating an enabling environment early in the recovery process. Coordination of the different tiers of government, including between federal and provincial governments, will be key. The institutional arrangement setup, financing, and implementation arrangements will be undertaken through a combination of centralized coordination and planning, and decentralized implementation. Central coordination is critical for setting standards, policies, and principles to guide the recovery and ensure inclusiveness, transparency, and good governance. The institutional and implementation arrangements are key to creating an enabling environment early in the recovery process. Special arrangements to balance effective, consistent, and efficient processes in the recovery will be important. This includes fiduciary requirements, such as fast-tracked time-based recovery plans and corresponding investment approvals, and procurement processes.

**Recovery Planning:** The recovery framework should provide guidance on how the PDNA recommendations will be operationalized by prioritizing the most affected sectors and interventions in the immediate and short term (up to 12 months) and linking them with the medium to longer-term recovery and reconstruction needs. Strategic prioritization of interventions across all sectors, along with stakeholder mapping and resource mobilization planning, should be initiated. Prioritizing needs based on criteria, such as urgency, institutional capacity, and financing feasibility, and developing financing plans and detailed recovery action plans will also be necessary. The plan should prioritize the urgent needs of the affected population and take an inclusive, participatory, and conflict-sensitive approach, ensuring an efficient, equitable, coordinated, and transparent delivery that is led by the government and supported by the international community. A coordinated transition from humanitarian response to recovery will be a complex yet critical challenge. The recovery and reconstruction plan should be rooted in detailed analysis, including multi-hazard risk assessments, which will be essential to understanding the underlying drivers of the flooding and its long-term impacts. Embedding systemic resilience beyond reconstruction through investments in physical, social, financial, and human capital will provide an opportunity for Pakistan to transform its development trajectory.

# 3. Macroeconomic Impact Assessment

Photo credit: UNDP

The devastating floods of 2022 are expected to have a substantial negative impact on Pakistan's economy. Economic activity has been severely disrupted, and livelihoods have been impacted; poverty is expected to increase significantly. The government will need to provide immediate relief to impacted communities and support recovery, while simultaneously ensuring macroeconomic stability and fiscal sustainability. This will present difficult policy tradeoffs in the context of challenging global economic conditions, high government debt and debt service payments, and already-large domestic and external financing needs. Evidence from previous natural disasters in Pakistan suggests that economic impacts may persist for an extended period, with damages to the productive capacity of the economy reducing growth prospects over the medium term.

# Pre-floods Economic Scenario

Prior to the floods, Pakistan's economy was facing difficult economic conditions and undergoing adjustment measures to regain macroeconomic stability. Supported by accommodative macroeconomic policies, the economy expanded by 6.0 percent in FY22. Strong domestic demand, coupled with low productivity growth, high world commodity prices, and the global economic slowdown, contributed to severe external imbalances. The current account deficit consequently reached 4.6 percent of GDP in FY22—the largest in four years. The fiscal deficit (excluding grants) was also large at 7.9 percent of GDP in FY22. The large current account and fiscal deficits, together with political and policy uncertainty, contributed to a loss of investor confidence, leading to pressures on the exchange rate, foreign reserves, and domestic prices over late FY22. To stabilize the economy and complement the ongoing monetary tightening, the government began implementing a range of policies to constrain aggregate demand, including a contractionary budget and increases in domestically administered energy prices. The federal government had targeted a fiscal deficit of 4.9 percent of GDP and a primary surplus of 0.2 percent of GDP for FY23, down from the 7.9 percent fiscal deficit and 3.1 percent primary deficit in FY22. Real GDP growth was therefore expected to slow significantly in FY23 prior to the floods, to around 3.5 percent.[28] As a result of stabilization measures, total public debt was expected to decline gradually from current high levels, while foreign exchange reserves were expected to slowly accumulate.

**TABLE 3. KEY MACROECONOMIC INDICATORS FY18–22 (YEAR-ON-YEAR, %)**

| | FY18 | FY19 | FY20 | FY21 | FY22 |
|---|---|---|---|---|---|
| GDP Growth (at factor cost) | 6.1 | 3.1 | -0.9 | 5.7 | 6.0 |
| Agriculture | 3.9 | 0.9 | 3.9 | 3.5 | 4.4 |
| Industry | 9.2 | 0.2 | -5.7 | 7.8 | 7.2 |
| Services | 6.0 | 5.0 | -1.2 | 6.0 | 6.2 |

28 International Monetary Fund. September 1, 2022. "Pakistan: Seventh and Eighth Reviews under the Extended Arrangement under the Extended Fund Facility, Requests for Waivers of Nonobservance of Performance Criteria, and for Extension, Augmentation, and Rephasing of Access." Press Release, Staff Report, Staff Statement, and Statement by the Executive Director for Pakistan.

| | FY18 | FY19 | FY20 | FY21 | FY22 |
|---|---|---|---|---|---|
| Real GDP Growth (at market price) | 6.2 | 2.5 | -1.3 | 6.5 | 6.2 |
| Private consumption | 7.2 | 5.6 | -2.8 | 9.3 | 10.0 |
| Government consumption | 5.5 | -1.6 | 8.5 | 1.8 | -3.4 |
| Investment | 9.9 | -9.7 | -6.1 | 4.7 | 2.9 |
| Gross fixed capital formation | 10.3 | -11.1 | -6.7 | 4.5 | 2.5 |
| Public | 18.5 | -33.0 | -12.9 | 11.9 | 12.7 |
| Private | 7.1 | -1.7 | -4.9 | 2.5 | -0.5 |
| Exports of goods and non-factor services | 10.0 | 13.2 | 1.5 | 6.5 | 8.4 |
| Imports of goods and non-factor services | 15.7 | 7.6 | -5.1 | 14.5 | 15.6 |
| Consumer Price Index (CPI) Inflation | 4.7 | 6.8 | 10.7 | 8.9 | 12.2 |
| Current Account Balance (% of GDP) | -5.4 | -4.2 | -1.5 | -0.8 | -4.6 |
| Fiscal Balance (% of GDP), excluding grants | -5.8 | -7.9 | -7.1 | -6.1 | -7.9 |
| Public Debt, including govt. guaranteed debt (% of GDP) | 67.1 | 78.0 | 81.1 | 75.6 | 78.0 |

Source: Pakistan Bureau of Statistics, State Bank of Pakistan

# Economic Impact of the Floods

The floods are expected to have a substantial adverse impact on output, which will vary substantially by region and sector. The aggregate economic impact of the floods will, however, depend on the policy response. Substantial expenditures on relief, recovery, and rehabilitation could mitigate the loss in output at the potential cost of worsening fiscal and external imbalances.

Overall damages are estimated at PKR 3.2 trillion (US$14.9 billion), equivalent to 4.8 percent of FY22 GDP.[29] The agriculture sector and industry sector each incurred one-quarter of the total damages, while the services sector accounted for nearly half of the total damages.

Among the major economic sectors, agriculture sector value added is projected to decline the most, at 0.9 percent of FY22 GDP, with floods causing the most losses to cotton, date, sugarcane, and rice crops. Around 1 million livestock are also estimated to have perished.[30] Furthermore, damages in the agricultural sector are expected to have spillover effects on the industry and services sectors. Flood-related cotton losses are expected to weigh on the domestic textile industry, as local cotton constitutes about half of the industry's required cotton input. Textiles account for around one-quarter of total industry output and more than half of goods exports. Similarly, the local food processing and slaughtering industries will be negatively impacted by the expected reduction in food harvests and reduced supply of livestock. As a result, industry sector value added is expected to shrink by 0.7 percent of FY22 GDP. Similarly, lower agricultural and

29 GDP at market prices at current prices for FY22 (PKR 66.9 trillion; US$31.1 billion).
30 NDMA. October 19, 2022. "NDMA Floods (2022): Sitrep Report No.128." *https://cms.ndma.gov.pk/storage/app/public/situation-reports/October2022/QECa7rSLzWINuxZFHrHV.pdf.*

industrial activity is likely to adversely impact wholesale and transportation services activities, which account for around half of service sector output. In addition, transportation challenges arising from the loss of critical infrastructure (e.g., roads and bridges) are expected to disrupt supply and further dampen overall economic activity. Value added in the service sector is consequently projected to decline by 0.6 percent of FY22 GDP. Overall GDP decline as a direct impact of the floods is estimated to be around 2.2 percent of FY22 GDP.

The direct adverse impact of the floods on economic growth is expected to be partially mitigated by fiscal measures undertaken by the government. A flood relief cash transfer scheme is underway, through which 1.1 million targeted households are being provided with PKR 25,000 to meet emergency needs. In addition, a temporary elimination of customs duties on essential items for flood-associated relief work has been introduced. Additional budget allocations are expected to be required to meet relief and recovery needs during FY23. Meanwhile, fiscal revenues are expected to be dampened by contracting tax bases, suspension of some food import duties, and slower activity overall. In light of the greater expenditure needs and lower revenue collections, the floods are expected to have a widening effect on the primary and overall fiscal deficits.

The floods will also exacerbate existing external pressures. Around 50 percent of the required cotton input for the local textile industry is sourced domestically. With reduced supplies of domestic cotton, cotton imports are expected to increase to mitigate the shortage. Imports of food products, wheat, pulses, construction machinery, and medicines are also expected to increase based on increased needs and domestic shortages. Meanwhile, reduced exports of textiles, rice, fruits and vegetables, leather products, cement, and sugar are expected to further widen the trade deficit. Based on the 2010 floods experience, workers' remittances are likely to increase and continue to play an essential role in financing household consumption and the trade gap. Recent data on remittances recorded an inflow of US$2.7 billion during August 2022, posting an increase of 1.6 percent year-on-year, up from a contraction of 7.7 percent for July 2022.

Inflationary pressures are expected to continue being elevated on account of rising food prices and the weaker exchange rate. With the hike in government administered energy prices, headline CPI inflation had soared to 27.3 percent and 23.2 percent in August and September 2022, respectively. Inflation could increase further as food prices rise in response to crop damage, loss of livestock, and the disruption of transport infrastructure critical for supplying agriculture output to markets. In the CPI basket of goods, essential food commodities such as wheat, rice, chicken, meat, eggs, milk, and fresh vegetables make up 18.4 percent of the total urban CPI and 26.9 percent of the rural CPI. Increase in the prices of these items due to their direct link to the domestic production of crops, poultry, and other livestock will ultimately increase CPI. Price increases as measured by the Sensitive Price Index (SPI), which measures price changes of selected essential items on a weekly basis, had been consistently rising through August, reaching a peak of 45.5 percent for the week ending September 1. Within the SPI basket of goods, food items that have recorded rapid increases in prices are tomatoes, onions, potatoes, eggs, and chicken.

# Risks and Priorities

The floods are expected to have a substantial negative impact on Pakistan's economy. Prior to the floods, the economy was already facing a difficult adjustment to regain macroeconomic and fiscal stability. Implementation of government plans for the necessary fiscal consolidation is likely to become more

challenging given extensive relief and recovery spending needs and slower growth of tax bases due to weaker economic activity. While targeted relief measures are needed to cushion the human and economic impacts of flooding, delays in fiscal consolidation will heighten risks to macroeconomic and fiscal stability in the context of the high inflation and fiscal and current account deficits. Similarly, monetary policy should necessarily be maintained at the current tight stance given the overheating economy, extremely high inflation rates, and exchange rate depreciation pressures.

The full economic impact of the floods remains unknown as the situation is still evolving. Large areas remain inundated, hindering on-the-ground damage assessments. Estimates of flood impacts could therefore worsen as more information becomes available from previously inaccessible areas, or through further crop and livestock losses due to shortages of animal feed, disease, or impacts on the next planting season. Economic challenges would intensify with worsening flood impacts and with delayed or inadequate response efforts.

Largely due to high persistent fiscal deficits, the financial sector has a large exposure to government securities, intertwining its health with the fiscal resilience of the government. Per regulations, bank holdings of government papers need to be "marked-to-market" or revalued daily in response to changes in interest rates in the secondary markets. As interest rates have been increasing, banks are exposed to interest rate risks on their government securities and have started to incur sizable losses on their government-investment portfolios. Flood-related losses have also exposed the microfinance sector to significant downside risks both in terms of profitability and stability in the immediate to medium term. In addition, unanticipated fiscal financing needs are expected to be largely met from domestic borrowing, possibility contributing to further crowding-out of private sector financing, increasing debt servicing costs, and strengthening the sovereign-financial nexus and associated risks.

To manage short-term risks, the government needs to strike a delicate balance between progressing on the required fiscal consolidation and meeting targeted relief and recovery needs. In the context of high domestic and external financing needs, ongoing political uncertainties, and upcoming elections, maintaining market confidence will be critical. Clearly articulating and effectively implementing an economic recovery could help manage market perceptions. It will be critical to maintain a tight monetary policy stance; pursue fiscal consolidation to the extent possible, including through the tight targeting and prioritization of any new expenditures; and proceed with planned structural reforms, including in the energy sector.

Given Pakistan's limited fiscal resources, significant international support and private investment will be essential for a comprehensive and resilient recovery. The Pakistani authorities are committed to accelerate reforms to generate additional domestic fiscal resources and improve efficiency and targeting of public spending. Beyond the immediate needs of floods reconstruction, these reforms, while protecting the most vulnerable, will be important to generate fiscal space to invest more broadly into more climate-resilient infrastructure and adaptation to climate change, as well as to build buffers to face future shocks, while addressing macroeconomic imbalances. This commitment of the Government will also be key to mobilize further international support as well as to unlock private sector sources of financing—both of which will be absolutely critical to face the current climate change-induced shock.

# 4. Human Impact Assessment

Photo credit: UNDP

The size and duration of shocks will vary across locations and households. This is dependent on the intensity of the flooding and the time it takes for the water to recede, the pre-floods socioeconomic status of the household, and the quality of relief and reconstruction efforts. Even in the best-case scenario, reversing these negative shocks to household welfare will take considerable time; and some losses, such as losses to human capital and loss of land productivity, could set in motion more durable declines in welfare and will require specific attention.

Prior to the floods, many of the calamity-hit districts already suffered from higher monetary and non-monetary poverty, especially among households in rural areas. Moreover, higher stunting rates in these districts undermined progress toward better development outcomes.[31] In 2018–19, 21.9 percent of the population (around 50 million people) lived below the national poverty line. Beyond the national average, rural poverty was more than twice as high as urban poverty (28.2 percent compared to 10.9 percent), and four out of five poor households lived in rural areas.[32] Households in calamity-hit districts were more impoverished than the national average (31.4 percent compared to 21.9 percent), and poverty rates for many flood-affected districts in Sindh and Balochistan were much higher. For instance, district-level poverty rates for calamity-hit districts in Balochistan ranged from 26.3 percent in Kohlu to 75.8 percent in Khuzdar; and for Sindh, from 15.0 percent in Hyderabad to 53.4 percent in Badin. Out of the 25 poorest districts in the country, 19 were calamity-affected.

Non-monetary measures of poverty suggest that during the pre-flood period, households in calamity-hit districts also experienced worse living standards and gaps in access to utilities. These households were likelier to live in *katcha* or *katcha/pucca* homes (made entirely or partially of mud and unbaked bricks), which heightened their vulnerability to disasters such as flooding. Furthermore, 15.7 percent of people in calamity-hit districts lacked access to electricity, compared to 9.3 percent nationally. Households were also more likely to lack access to basic sanitation facilities and clean water. In calamity-hit districts, 11 percent did not have access to clean water, almost twice the national average of 6.5 percent.

31 This section is largely based on survey-based estimates; given restrictions in access the data, the analysis only describes outcomes for 75 calamity-hit districts in Punjab, KP, Sindh, and Balochistan.

32 Beyond spatial differences in poverty rates, female-headed households are on average poorer than those headed by men.

Beyond monetary and non-monetary poverty, areas affected by the floods showed some of the highest stunting rates in the country. Stunting is worse in rural areas and among poor households that lack adequate water and sanitation facilities. Sindh and Balochistan stand out at the province level.[33] Similarly, vast differences can be seen among districts, where district-level stunting rates of over 50 percent are commonplace. In addition, estimates suggest that on average, 20 percent of the households in flood-affected areas were moderately or severely food insecure,[34] which is above the national average of 16 percent.[35] Among provinces, the highest proportion of people food insecure are in Sindh with 22.3 percent (3.9 million people) and Balochistan with 22.7 percent (1.6 million people).

Higher poverty rates in calamity-hit districts reflect lower productivity and more limited resilience arising from deficits to their human capital endowment, and constraints in access to opportunities in labor markets. Before the 2022 floods, these overlapping deprivations made households and individuals more vulnerable to natural hazards and, ex-post, exposed them to further risks to either fall deeper or remain behind permanently. For instance, the Human Capital Index (HCI) for Pakistan suggests that a child born today will be 41 percent as productive when they grow up as they could be if they enjoyed complete education and full health. This is lower than the average for the South Asia region and lower middle-income countries. Due to lower school attendance rates in Balochistan and KP, Due to lower school attendance rates and worse health outcomes in Balochistan and KP, the HCI is likely to be lower in calamity-hit districts than the rest of the country.[36] In addition, prior to the floods, less than half of the population had adequate health care coverage. At the national level, the percentage of women availing postnatal care was only 33 percent and child mortality was high.[37] Nationwide, close to 22 million children aged five to 16 years were out of school during 2019/20.

Employment in the calamity-hit districts was mainly concentrated in rural areas at 16.3 million people, representing nearly 75 percent of all employment in these districts. The latest figures from the Labour Force Survey 2020–21 suggest that 43 percent of the employed population (around 9.4 million people) worked in the agriculture sector in the affected districts, which is above the national average of 38.5 percent. In terms of employment status, many of the employed population in these districts were in vulnerable forms of employment, including own-account workers in the agriculture and non-agriculture sectors (3.6 million and 2.3 million people, respectively), contributing family workers in agriculture (4.1 million), and casual paid employees (3.5 million people), with only 4.7 million people employed in somewhat secure forms of employment. In addition, in the flood-affected areas, 80 percent of those employed are men, thus revealing significant gender disparities.[38]

The 2022 floods are expected to have a profound impact on lives and livelihoods. The assessment focuses on the direct impact of the floods and accounts for changes in household welfare arising from damage and loss, and disruption to basic services, in the aftermath of the floods. The impact on household welfare will come through at least four channels: (i) loss of household income and employment/livelihoods due

33 Figures are estimated from the provincial Multiple Indicator Cluster Surveys: Balochistan 2010; Punjab 2011, 2014, 2017; Sindh 2014; KP 2016, 2019.
34 Estimates based on Food Insecurity Experience Scale.
35 Government of Pakistan. 2021. "Pakistan Social and Living Standard Measurement Survey Report 2019–2020." Pakistan Bureau of Statistics.
36 Girls have less access to health and education services than boys do, potentially decreasing their earning potential and increasing their vulnerability to poverty as adults. ADB. 2010. "Sindh Growth and Rural Revitalization Program." *https://www.adb.org/sites/default/files/linked-documents/41545-02-pak-sprss.pdf.*
37 According to the Pakistan Demographic Health Report, under-five mortality rate was 74 deaths per 1,000 live births, infant mortality rate was 62, and the neonatal mortality rate was 42.
38 Women make up 68 percent of the agriculture labor force. See: Government of Pakistan. 2022. Labour Force Survey 2020–21." Pakistan Bureau of Statistics. *https://www.pbs.gov.pk/sites/default/files/labour_force/publications/lfs2020_21/LFS_2020-21_Report.pdf.* For more details on the impact of the floods on employment, livelihoods, and incomes, please refer to the Social Protection, Livelihoods, and Jobs subsection in Section 5.

to destroyed harvest, killed livestock, or inactivity of businesses; (ii) loss of assets, including homes, livestock, productive equipment, and household durables; (iii) rising food prices due to shortages of food arising from lost food stocks and poor harvests; and (iv) loss of human capital, given the significant threat of disease outbreaks and food shortages, and prolonged school closures, with attendant learning losses.

Preliminary estimates suggest that the national poverty rate will increase by 3.7 to 4.0 percentage points, pushing between 8.4 and 9.1 million people into poverty, as a direct consequence of the floods. Similarly, multidimensional poverty will increase by 5.9 percentage points, meaning that an additional 1.9 million households will be pushed into non-monetary poverty. Estimates focus on the short-term impact. Depending on location and design of relief and reconstruction, the impact may vary. Beyond the national average, poverty in Sindh would increase by between 8.9 and 9.7 percentage points, and in Balochistan by between 7.5 and 7.7 percentage points. Moreover, the depth and severity of poverty will increase for households that were already poor prior to the floods. The poverty gap has substantially increased, with the number of extremely poor people living more than 20 percent below the poverty line increasing from 18 to 25–26 million.

Beyond the increase of monetary poverty, estimates indicate an increase in multidimensional poverty from 37.8 percent to 43.7 percent, meaning that an additional 1.9 million households will be pushed into non-monetary poverty. This entails significant increased deprivations around access to adequate health, sanitation, quality maternal health care, electricity, and loss of assets. Multidimensional poverty will increase by 13 percentage points in KP, followed by 10.9 in Balochistan, and 10.2 in Sindh.

Vulnerable groups such as women, children, people with disabilities, and refugees are likely to be disproportionally affected by the floods given their dire circumstances and limited access to social protection and coping mechanisms. The impact of the floods is likely to exacerbate already existing gender inequalities, revealing serious differences in safety, education, decision-making, and employment. More than 800,000 Afghan refugees currently live in calamity-hit districts in Pakistan. These refugees are likely to be poorer than community members, have fewer assets (including land), and live in camps with poor basic services, and depend on humanitarian assistance. Furthermore, 3.8 million people with disabilities live in the calamity-hit districts. People with disabilities are often marginalized, economically disempowered, and face discrimination in education, employment, housing and transport, and other social services.[39]

Beyond the increase of monetary poverty, the 2022 floods will have a detrimental impact on human development outcomes, potentially deepening existing inequities across households and individuals. The floods will trigger substantial losses to human capital (education and health) with increased incidence of stunting and learning losses, which will have a long-lasting impact on productivity and resilience unless addressed during the rehabilitation phase. An additional 1.2 million households with children between six and 11 years of age will be prevented from attending school, with girls' education disproportionately deprioritized at the household level. This will significantly disrupt, and in some cases effectively halt, their formal education. In addition to learning loss, school closures have impacted children's mental health, reduced their access to a regular source of nutrition, and increased their risk of abuse. This situation further increases young girls' vulnerabilities and chances of unintended pregnancy and early and forced marriages.

In addition, recent gains in infant and maternal health may be reversed, undermining efforts to reduce poverty. There will be an increase in the proportion of households deprived of access to health facilities

39 For more details on vulnerable groups, please refer to the Social Sustainability, Inclusion, and Gender subsection in Section 5.

(such as clinics and basic health units) from 31.4 percent to 34.9 percent, representing an additional 1.2 million households. As a result, an additional 5.5 million households with children under five will not be fully immunized, leaving children at risk of deadly and preventable diseases. An additional 2.8 million households with newborns will be deprived from ante-natal check-ups and post-natal care. Furthermore, 1.5 million households will be deprived of clean water and sanitation, placing more pressure on overstretched healthcare services, thus perpetuating a vicious cycle of disease and poverty. Women will be disproportionately impacted given their role as water and solid waste managers at the household level and as caregivers.[40] The floods will likely aggravate the burden on women's duties and increase their vulnerability in terms of both health and personal safety.

Preliminary estimates suggest an additional 7.6 million people face food insecurity at the national level, increasing from 7 million to 14.6 million people, as a result of loss of production and price increases. The highest number of food insecure people are in Sindh (8.2 million), followed by Balochistan (2.4 million), KP (2.3 million), and Punjab (1.7 million). Expected delays in the sowing of rabi[41] crops, particularly wheat, are likely to further reduce food availability and drive price increases in the coming months, making access to food more difficult, particularly for low-income groups in hard-hit areas.

Food shortages and widespread disease, associated with increased deprivations of access to safe drinking water and sanitation, will likely have a significant impact on stunting rates in the long term. Regression analysis on stunting suggests that lacking an improved source of drinking water can increase the likelihood of stunting by 9 percent. Lack of adequate sanitation also increases the possibility of stunting by 4 percent. Children from the poorest households (lowest 20 percent wealth status) face the brunt of poor nutritional status, with a 43 percent likelihood of being stunted. A mother's body mass index (BMI) is crucial to a child's nutritional status. Children of mothers with a low BMI are 40 percent more likely to be stunted.

Women in particular have suffered notable losses to their livelihoods, particularly associated with agriculture and livestock, with attendant negative impacts on their economic empowerment and well-being. The floods have increased women's vulnerability to gender-based violence (GBV) due to aggravated household tensions, harassment, and abuse related to displacement and lack of secure infrastructure. Rates of early and forced marriages often increase in the wake of crises and economic security. The United Nations Population Fund estimates that 640,000 adolescent girls during the current crisis are vulnerable and at increased risk of coercions, GBV, and child marriage. Moreover, some other groups of the population might experience disproportional losses, including refugees and displaced persons from Afghanistan, since they are inadequately covered in national household surveys.[42]

In response to the floods, many individuals and households will experience a deterioration of their living standards and circumstances. Interventions should provide immediate relief to those most in need, and the recovery must address the vulnerabilities of those most affected to strengthen the inclusive character of the recovery.

In the immediate aftermath of the floods, social assistance and emergency cash transfers will play an essential role in compensating households for damage and loss of livelihoods, assets, and rising prices,

40 Women already spend 10 times the hours as men in unpaid care work. See: United Nations Development Programme. March 12, 2021. "Womenomics: Women Empowering the Economy." Special Edition Report, Development Advocate Pakistan. *https://www.undp.org/pakistan/publications/womenomics-women-powering-economy-pakistan.*

41 Rabi crops are agricultural crops that are sown in winter and harvested in spring.

42 For more details on the impact of the floods on vulnerable groups, please refer to the Social Sustainability, Inclusion, and Gender subsection in Section 5.

especially for food. Cash transfers can also help prevent households from engaging in negative coping strategies, including child labor.

The provision of emergency health services, with a particular focus on children and women, needs to address a looming health crisis. The increased risks arising from waterborne diseases such as cholera, malaria, and dengue, and the collapse of safe sanitation and limited access to nutrition could have long-lasting implications for inclusive growth (including a rise of stunting rates). Particular attention should be given to pregnant women, lactating mothers, newborns, children under five, immunocompromised persons, and patients with chronic diseases, including people with disabilities and the elderly, whose pre-existing conditions are further aggravated (or whose drug adherence was compromised) by the lack of access to drugs and health services as a result of the floods.

Finally, programs and policies to support recovery need to reach the worst affected geographic areas and all types of households. Livelihood assistance could support future income generation. Grants, especially to smallholder farmers, could secure their survival, while also contributing to future food supply. International evidence suggests that labor-intensive construction works, such as cash-for-work schemes in infrastructure rehabilitation, will be important to support livelihood restoration and income-generating opportunities. Such schemes should include technical facilitation and skills development on climate adaptation and resilience building.


Photo credit: PRIDE - SIA Pakistan

# 5. Summary of Sector Reports

Photo credit: UNDP

# Social

Photo credit: UNDP

# Housing

**Damage: PKR 1,200 billion (US$5,586 million)**
**Loss: PKR 137 billion (US$636 million)**

The 2022 flooding caused widespread destruction of housing and human settlements. In the 94 calamity-hit districts, approximately 780,000 houses were destroyed and more than 1.27 million houses were partially damaged. Rural houses were particularly impacted, and the extent of damage incurred to katcha houses has been higher than that to pucca houses. Among provinces, the housing stock in Sindh has been the worst affected, accounting for 83 percent of the total housing damages. The damage to houses not only caused significant loss of household assets, but a severe disruption to family life. Housing losses caused large-scale displacement with associated risks, including to health.

**Recovery and Reconstruction Needs: PKR 592 billion (US$2,757 million)**

Reconstruction should be an opportunity to build not just safer homes, but resilient communities, villages, and cities. The needs estimate is largely premised on the subsidy required to support a core housing unit of one room, which includes a kitchen and toilet rebuilt to an appropriate and affordable hazard-and climate-resilient standard. Any additions to the core unit may be added by the owners. Housing reconstruction should have a longer-term horizon and be supported by better planning and development regulations, coordinated service delivery, and stronger capacity of communities and government institutions to manage disaster and climate risks. The priority interventions in the immediate to short term should be to develop housing and settlement recovery policies and institutional arrangements to coordinate stakeholders and service delivery, and to plan and manage implementation. Communities require prompt technical guidance and support where flood water has already receded, and over a sustained period where reconstruction is protracted.

# Education

**Damage: PKR 120 billion (US$559 million)**
**Loss: PKR 47 billion (US$219 million)**

The 2022 floods caused unprecedented cumulative damage and loss to the public education sector. In the assessed districts, the entire span of education services, from pre-primary to lifelong learning, has suffered. The floods have impacted approximately 17,205 public schools (primary to higher secondary), colleges, special education centers/schools/institutions, technical and vocational education and training centers, and universities. At least 6,225 education institutions were assessed as fully damaged and 10,980 as partially damaged. This has affected some 94,478 teachers and 2.6 million enrolled students

(of which over 1 million are estimated to be female students). School education (pre-primary to higher secondary) suffered the most, with a 97 percent share of all damaged education institutions affecting an estimated 2.4 million students. Within school education, the damage to primary schools is highest with an 80 percent share of all damaged institutions, affecting 1.1 million students.

### Recovery and Reconstruction Needs: PKR 197 billion (US$918 million)

The roadmap for recovery includes an immediate focus on the resumption of learning through alternative or temporary learning spaces to mitigate risks to children and adolescents' education, protection, and well-being. This is particularly important as the reconstruction and repair of accessible, safe, secure, and inclusive education institutions will continue into the medium to long term. Ensuring quality education should be prioritized throughout all recovery phases, including the need to assess learning losses, plan for learning recovery, establish systems to track students' access and learning, and continuous education and support for teachers to adapt to new conditions. Recovery strategies should also emphasize the need to strengthen disaster preparedness and response at all levels through disaster risk management training and emergency response planning in the medium term and incorporating disaster resilience in education sector planning and implementation in the long term.

## Health

### Damage: PKR 23 billion (US$109 million)
### Loss: PKR 7 billion (US$34 million)

The 2022 floods affected close to half of the country, damaging 13 percent of the health facilities, which in turn interrupted health service delivery from the community level (primary healthcare including Rural Health Centers and Basic Health Units) through the secondary level (District Headquarters, Tehsil Headquarters, and Civil Hospitals). More than one-fifth of affected facilities were fully damaged. Malnutrition, which was already dangerously high, has substantively increased. Around 650,000 pregnant women are facing challenges in getting access to maternal services, while nearly 4 million children lack access to health services. Pakistan is experiencing substantive increases of communicable diseases such as acute diarrhea, cholera, malaria, and dengue. Disruption in health service delivery will increase health inequities for the poor and disadvantaged due to hindered access to services such as immunizations, routine medical care including medication for chronic disease, maternal and child health services, as well as risk of higher out-of-pocket health expenditures.

### Recovery and Reconstruction Needs: PKR 40 billion (US$188 million)

This analysis, which was limited to the public health system only, accounts for the: (i) reconstruction of health infrastructure with improved resilient capacities for PKR 27.1 billion (US$126 million); (ii) immediate additional needs for resumption of health services, including an urgent response to outbreaks of vaccine-preventable and communicable diseases, which will be the top priority followed by earliest resumption of essential healthcare to affected populations for a total of PKR 5.8 billion (US$27 million); and (iii) use of prefabricated facilities and the use of mobile clinics to reach the most vulnerable communities for a total

of PKR 7.2 billion (US$34 million). Immediate action is required to restore essential service delivery and critical public health functions, particularly disease outbreak surveillance in affected districts, to minimize the impact of the disaster on health of population. For the medium and long term, there is need to build resilient health systems and infrastructure to enhance the readiness to respond to crises (infectious disease outbreaks, natural hazards), while also maintaining core functions of health systems.

# Culture and Heritage

### Damage: PKR 1.3 billion (US$6.1 million)
### Loss: PKR 1.4 billion (US$6.7 million)

The 2022 floods severely impacted the culture sector across Pakistan. Early estimates indicate at least 149 sites, including two World Heritage Sites in Sindh, have suffered partial but considerable damage across the assessed areas. In addition, numerous Buddhist stupas, Hindu temples, and tombs of pre- and post-Islamic dynasties have suffered extensive damages. Religious sites in active use, including mosques, shrines, and dargahs, have also been extensively damaged. While movable heritage and cultural repositories have remained largely unscathed, the affected sites are in danger of further deterioration as stagnant floodwater in some areas is affecting foundational stability and structural integrity. Many of the impacted sites are historically and culturally significant, and deterioration and damage to the sites will negatively affect visitor numbers and revenue from ticket sales, and indirect earnings for the food, hospitality, and tourism sectors. Built heritage is almost always accompanied by intangible cultural heritage in the communities that live around the site, forming not only the foundation of social systems, but also supporting livelihoods. Damaged heritage sites, loss of income, displacement, and possible migration to urban centers will continue to result in heavy, often irreparable losses to the tangible and intangible cultural heritage of Pakistan.

### Recovery and Reconstruction Needs: PKR 1.8 billion (US$8.5 million)

Immediate to short-term measures include detailed damage assessment and funds mobilization. Urgent stabilization measures must then be carried out at the most fragile sites, with the support of appropriate equipment, material, and trained expertise. Medium-term measures must focus on the capacity building of heritage management staff to better equip them to implement urgent stabilization measures and emergency preparedness response for the current and future natural disasters. Long-term measures include the inclusion of indigenous knowledge into mainstream practices, such as water management systems and sustainable building practices, to establish more climate-resilient societies and to safeguard intangible cultural heritage. Improved flood protection mechanisms for heritage sites in vulnerable areas must be established. Policy actions required in the long term include stricter enforcement of construction, conservation, and protection regulations for heritage sites. Early warning systems, protective measures, and evacuation plans for vulnerable sites and movable heritage during known high-risk periods (e.g., monsoon) must be established. Regular training of staff to build capacity in global best practices as well as indigenous knowledge for protective measures against climate-induced calamities are also necessary. There is a dire need to collect data, build provincial and national inventories for cultural heritage, and include contributions of the culture and creative industries to national GDP.

# Infrastructure


Photo credit: UNDP

# Transport and Communications

**Damage: PKR 701 billion (US$3,264 million)**
**Loss: PKR 60 billion (US$281 million)**

The main impact in this sector has been on roads, railways, bridges, and telecommunications infrastructure. Initial estimates suggest that approximately 8,330 kilometers of roads (about 3.2 percent of total in-service roads) and 3,127 kilometers of railway track (around 40 percent of total in-service railways) have been damaged to various extents due to the floods. The railway sector has been the most impacted, given its large pre-flood maintenance backlog. Telecommunications infrastructure damage includes damage to fiber optic transmission lines, feeder cables, and in some cases transmission towers. Sindh has sustained the highest damages, followed by Balochistan and KP.

**Recovery and Reconstruction Needs: PKR 1,073 billion (US$4,994 million)**

The needs estimates factors in post-flood escalation and costs for building back better and smarter to ensure muti-hazard disaster resilience of investments. Most roads and railways have been temporarily restored in the damaged sections so that traffic can resume. Temporary steel bridges were launched on an emergency basis and diversions were created to restore access and connectivity for sections that were washed away. However, some road and rail sections in central Sindh remain inundated and operations suspended. For the short term, priority ought to be given to restoring critical transport links (railways, roads, bridges) where operations are suspended, to restoring basic connectivity, and to replacing temporary works with permanent repairs where damages are minor. For the medium to long term, investments should be prioritized to reconstruct and rehabilitate the core national and provincial transport corridors carrying the highest volumes (road and rail), and road sections in the production hubs of the affected area (livelihood restoration). The resources should then progressively shift toward complete rehabilitation of secondary corridors and rural roads. The vulnerability and risk assessment data should also be used by the Pakistan Telecommunication Authority to ensure that the damaged infrastructure of telecommunication companies is restored to climate and disaster resilience standards as a functioning telecommunication system is critical for the efficacy of early warning systems and emergency response.

# Energy

**Damage: PKR 19 billion (US$88 million)**
**Loss: PKR 0.5 billion (US$2.5 million)**

For the petroleum sector, the total reported damages are PKR 2 billion (US$9.3 million). Damage in the petroleum sector is primarily reported from the impairment of the transmission and distribution

pipeline network of Sui Southern Gas Company (SSGC) in Sindh and Balochistan provinces. In the power sector, most of the direct damage is to the distribution network and the hydroelectric power generation stations. Due to distribution network outages, most of the affected population in Sindh, Balochistan, southern Punjab, and KP suffered from electricity blackouts. Damage was also observed in several micro- and mini-hydroelectric power generation facilities; although this will have minimal impact on national generation capacity, it will nonetheless adversely affect many remote communities that are serviced solely by these facilities. In the petroleum sector, major damage has been reported to buildings infrastructure in Balochistan and Sindh. The distribution pipelines of SSGC have been partially damaged, up to 14.5 kilometers in Balochistan and 2.8 kilometers in Sindh. In addition, two gas distribution pipelines to Quetta—the provincial capital of Balochistan have also been damaged. The refineries and oil and gas exploration companies have not reported any damages or losses due to the floods as these are covered under the insurance policy subject to a certain percent of deductibles.

## Recovery and Reconstruction Needs: PKR 25 billion (US$117 million)

The power sector utilities have already restored electricity wherever possible. However, the restoration cost has still been included in the needs for the power sector as the partial restoration carried out by the public sector power companies does not take into consideration the disaster vulnerability and related resilience requirement of restored infrastructure. It is imperative that the distribution network design is reviewed to make it more resilient to natural hazards such as floods and other disasters. The rehabilitation of micro- and mini-hydroelectric power plants mostly managed by communities has higher needs to ensure climate and disaster resilient designs and reconstruction, as they lack any options to access alternate sources of electricity in cases of disruption, which directly impacts livelihoods and access to education and facilities. Key recommendations include: (i) fast-track infrastructure restoration by allocating resources by utilizing existing stores and spares, and mobilizing existing civil works contractors of power utilities; (ii) immediately undertake vulnerability and risk assessment of damaged infrastructure both in the public sector and community infrastructure and advise revised design parameters to be used during complete restoration process; (iii) fast-track procurement for replenishment of stores and spares, and complete resilient restoration; and (iv) establish and implement standard operating procedures during emergencies and natural catastrophes. Recommended policy actions for the energy sector include: (i) establishing policy for unrecovered receivables from customers in the affected areas and subsidy/ financing for reconstruction of damaged community infrastructure; and (ii) policy for compensation to public sector companies for providing subsidized electricity or gas facilities during the emergency phases.

# WASH, Municipal Services, and Community Infrastructure

### Damage: PKR 123 billion (US$575 million)
### Loss: PKR 24 billion (US$112 million)

There has been damage to more than 7,060 schemes, including 4,344 water supply schemes and 2,716 sanitation (including drainage, pavement, and solid waste) schemes in the public sector, of which almost 84 percent are managed by the Public Health Engineering Department. A total of 1,346 water and sanitation schemes have been fully destroyed, while 5,714 are partially damaged, requiring major repair and rehabilitation. The estimated damage for public sector schemes has been assessed at PKR 40 billion (US$186 million). With negligible data available on community or private infrastructure and water and sanitation services that serve two-thirds of the affected population, the damage based on secondary data is estimated at PKR 83 billion (US$386 million). Estimated losses include forgone income of the utilities, additional cost incurred by about 1.5 million households on accessing water for three months, and additional health burden due to poor sanitation, all as the result of the floods. Complete indirect health impacts due to lack of access to water and sanitation cannot be fully assessed; however, increasing incidents of malaria, diarrhea, typhoid, and gastrointestinal diseases have been reported from the affected areas. The human impact is disproportionately borne by vulnerable groups, including women, the elderly, pregnant and lactating mothers, and children.

### Recovery and Reconstruction Needs: PKR 70 billion (US$327 million)

The multi-hazard resilient reconstruction of damaged or destroyed public infrastructure in the WASH sector is estimated to cost PKR 58 billion (US$270 million). In addition, PKR 12 billion (US$56 million) is the estimated cost of re-establishing water and sanitation services for the private and community schemes, which is based on subsidies of 5 percent of the total needs of the housing sector, excluding 30 percent damaged or destroyed houses that are served by the public sector utilities. The recovery and reconstruction process needs to be an inclusive and people-centric process, which supports community-led smart solutions to WASH challenges to ensure that rehabilitated water supply and sanitation infrastructure is resilient and can be managed and operated sustainably. In the short term, focus would remain on rehabilitation, cleaning and disinfection, repair of WASH facilities with minor damage, setting up other temporary arrangements to ensure immediate availability of water and sanitation across the affected area, and a targeted outreach for the vulnerable people. The reconstruction estimates include an allowance to resize and relocate a critical subcomponent of the water and sanitation facilities to ensure these are located and designed to sustain future disasters. In the medium term, the focus should be to find more locally tailored innovative solutions, building back better and smarter, increasing system calibration to improve monitoring and management, and increasing the role of local communities and the private sector in sustainable operations of these facilities. Appropriate oversight, regulations, and facilitations system will have to be put in place in the medium to long term to create appropriate incentives and institutional structures to sustainably operate the WASH services and improve the interface between service providers and their clients. The policy and regulatory improvement in the long term would need to focus on water quality, level of services, and appropriate tariff structure to increase efficiency of operations and prudence in the use of water.

# Productive Sectors

Photo credit: UNDP

# Agriculture, Food, Livestock, and Fisheries

**Damage: PKR 800 billion (US$3,725 million)**
**Loss: PKR 1,986 billion (US$9,244 million)**

Crops contributed to 82 percent of the total damage and losses in the sector, followed by livestock with 17 percent and fisheries/aquaculture with the remaining 1 percent. Around 4,410 million acres of agricultural land has been damaged, and 0.8 million livestock are estimated to have perished. Sindh and Balochistan are the most affected provinces, contributing 72 percent and 21 percent respectively to the total value of damage and losses registered in the sector, followed by KP, Punjab, and special regions. The destruction of crops, livestock, and aquaculture infrastructure and assets has resulted in the temporary deterioration of livelihoods, employment and agriculture related income, as well as potential decline of exports of important crops such as cotton and sugar cane.

**Recovery and Reconstruction Needs: PKR 854 billion (US$3,976 million)**

Reconstruction needs include restoration of assets at the individual/community level, as well as support to the public and private sector (poultry/dairy industry), which were also affected by the floods. Short-term activities should address immediate needs by ensuring preparedness for the incoming rabi season through land clearance and land preparation, and the distribution of agricultural inputs (seeds and fertilizers) to small and medium farmers. Scale-up in the provision of livestock feed, fodder, veterinary drugs, and restocking of small animals (poultry), especially targeting women and the most vulnerable households, is necessary. Rehabilitation of fishponds, irrigation schemes (including clearing and repairing watercourses), channels, and on-farm structures should be also implemented in the short term, together with the restoration of destroyed animal shelters, veterinary hospital, and clinics. In the medium to long term, various capacity-building exercises should be conducted with small and medium farmers and livestock keepers on risk mitigation practices, such as support to ecofriendly and climate-smart agriculture and livestock rearing. Awareness creation and development of standardized weather/holistic hazards index-based crop and livestock insurance systems targeting small holders should be also promoted.

# Water Resources and Irrigation

**Damage: PKR 153 billion (US$711 million)**

Public assets represent 98.5 percent of the total damage, while private assets account for 1.5 percent. Flood protection infrastructures and irrigation channels incurred the most damage at 36 percent and 32 percent, respectively; followed by drainage systems at 14 percent; dams, headworks, and weirs at 9 percent; and other supporting infrastructures at 8 percent. Overall, the irrigation water supply systems

(canals and dams) jointly suffered 41 percent of the total damage, which, if unaddressed, will adversely affect crop production in the coming production seasons. Contingent upon the recovery of the irrigation and drainage systems, especially in Sindh, low wheat production can be anticipated this year, which could lead to food shortages and high food commodity prices. Poor drainage in Sindh will further reduce crop production. In arid areas covering most of Balochistan, damage to irrigation and water storage infrastructures is causing disruption of irrigation services. Losses to crops due to flooding and inadequate irrigation supplies, siltation, and waterlogging are covered by the agriculture sector.

### Recovery and Reconstruction Needs: PKR 168 billion (US$782 million)

The short-term recovery strategy will require the immediate restoration of irrigation supplies and repairing critical damage to canals, drains, and flood protection embankment before the next main rainy season in June 2023. This comprises 15 percent of the total need. The intermediate-term recovery comprises 30 percent of the overall assessed needs and includes strengthening of canals, drainage ways, dams and appurtenant structures, construction of new structures and strengthening of flood protection embankment through structural and non-structural measures. The long-term recovery comprises the remaining 55 percent of the overall assessed needs and includes the complete operation of drains and drainage systems, canal systems, enhanced safety and stability of flood protection embankments, hydraulic structures, and flood channels. While investment in infrastructure reconstruction and rehabilitation will play a prominent role in the recovery, building long-term resilience will require considering the whole spectrum of infrastructural solutions and paying due attention to more effective nature-based solutions, taking advantage of landscape features and ecosystems. A more holistic approach, well grounded into spatial planning at the level of the adequate hydrological unit (watershed, catchment, or basin) and supported by adequate institutions and policies, will be needed. Increased focus on strategic measures to improve longer-term resilience, including enhanced enforcement of flood zoning arrangements, decision-making mechanisms relying on flood forecasting, and early warning systems, should be part of a medium to long-term recovery strategy. For this purpose, some key studies are recommended to: (i) identify and prioritize no-regret urgent interventions to be implemented in the short and medium term; and (ii) develop strategic master plans for resilience building in sensitive areas. A post-flood rapid scoping study needs to be conducted to specify the contours of such studies.

## Commerce and Industries

### Damage: PKR 40 billion (US$186 million)
### Loss: PKR 758 billion (US$3,527 million)

The impact was assessed using data received from Punjab and KP provinces, in addition to leveraging the Census of Manufacturing and Industries and Small and Households Manufacturing Industries data in conjunction with assumptions for the provinces of Balochistan and Sindh. The assessed damages and losses are not proportionate to the relatively large contribution of the industries and commerce sector in the economy, given that the floods largely spared the industrial heartland of the country, in addition to key urban centers.

There is a case for supporting the industries and commerce sector through market-oriented and fiscally neutral measures. Industries along with transport and storage, together with retail and wholesale trade, account for a sizable 47 percent of GDP and close to 46 percent of employees of ages 10 and above as of FY21, alluding to the importance of these subsectors for the economy and country at large. While direct support may not be feasible given the constrained fiscal and overarching macro position of the country, the sectors and firms within these sectors may be supported through market-oriented and fiscally neutral measures staggered over the short to medium term. The need for these measures pre-dates the floods, but their importance has only grown with the cascading economic impact of the floods. The three most important measures to facilitate recovery in the short to medium term include: (i) increased access to finance to restart operations, replenish working capital, and rehabilitate/replace capital where it was damaged/destroyed; (ii) continued implementation of business regulatory reforms throughout the recovery period, such as accelerating/streamlining processing of regulatory licenses, permits, and certificates; and (iii) design and implementation of a new economic census.

# Finance and Markets

**Damage: PKR 0.6 billion (US$2.9 million)**
**Loss: PKR 90 billion (US$417 million)**

The impact of the floods on the financial sector has been assessed primarily through damage to the physical infrastructure and projected loan losses of the banking and microfinance sectors (the latter includes microfinance banks [MFBs] and microfinance institutions [MFIs]). The reported impact to the physical infrastructure of the financial sector includes damages to 268 branches and an estimated 35 automated teller machines (ATMs) operated by commercial banks. Additionally, 81 microfinance branches and 2 ATMs have also been estimated as damaged. The physical infrastructure damages are estimated to be PKR 600 million (US$2.8 million), of which PKR 510 million (US$2.4 million) is in the commercial banking sector and PKR 90 million (US$0.4 million) in the microfinance sector. The flood-induced incremental non-performing loans of the banking and microfinance sector are estimated at PKR 84.2 billion (US$392.0 million), based on data provided by the sector regulators. Of these, the commercial bank losses are estimated at PKR 26 billion (US$121 million), MFB losses at PKR 33.9 billion (US$157.8 million), and MFI losses at PKR 24.3 billion (US$113.1 million). A further PKR 5.44 billion (US$25.3 million) is estimated as additional insurance sector claims that are not re-insured abroad, and PKR 190 million (US$0.9 million) as insurance infrastructure losses.

The financial sector recovery needs will emanate from its ability and inclination to enhance lending to the private sector. The rising risks to the commercial banking sector will hamper access to finance and limit credit to the private sector. Severe shocks to financial systems can lead to risk aversion from banks, especially in scenarios where the capital base has been weakened. This would lead to even more hesitancy in lending to a private sector that is already crowded out by lending to the public sector. The microfinance sector will become especially important to expand financial inclusion. The impact of the floods may constrain the liquidity of the microfinance sector in maintaining and growing its loan portfolio. Broad recommendations to support the financial sector include: (i) credit guarantee facilities; (ii) targeted regulatory forbearance that is time-bound; (iii) enhancing targeted refinancing lines for the housing,

agriculture, and small and-medium-sized enterprise sectors; and (iv) supporting the microfinance sector through lines of credit and disaster risk insurance.

# Tourism

### Damage: PKR 2 billion (US$10 million)
### Loss: PKR 20 billion (US$93 million)

The 2022 floods caused widespread devastation to the travel and tourism industry by damaging the connectivity infrastructure (roads and bridges) and partially or completely destroying the private sector enterprises and markets in the tourism value chains across Pakistan. This led to an immediate decline in the tourist footfall during peak tourism season. Tourism enterprises such as hotels, restaurants, and tour operators incurred physical damages and revenue losses. The supply chains were disrupted, and a complete closure of tourist sites have occurred in the affected districts. Almost 4,170 direct jobs in the private sector have been adversely impacted by the floods. These include permanent losses of seasonal jobs and partial losses in long-term jobs[43] within the tourism industry. The damages are more profound in KP, while sites in Sindh, Punjab, Balochistan, and other areas have reported losses. In KP, 12 percent of hotels have been completely destroyed and 6 percent have been partially damaged; and 57 percent of restaurants have been destroyed and 14 percent have been partially damaged. Total combined damage and losses reported in KP are PKR 2 billion (US$9.7 million) and PKR 11.2 billion (US$52.1 million), respectively. In Punjab, losses to the private sector amount to PKR 2.2 billion (US$10.2 million). Public sector damages for Sindh stand at PKR 20 million (US$0.1 million) and losses amount to PKR 10 million (US$0.05 million), whereas losses to the private sector stand at PKR 1.8 billion (US$8.2 million). The private sector losses for Balochistan's tourism sector were reported to be PKR 440 million (US$2 million). Some geographic areas reported no infrastructural damage but continue to suffer losses due to the reduced occupancy in hotels and substantial downfall in the private sector activity.

### Recovery and Reconstruction Needs: PKR 0.4 billion (US$1.6 million)

The immediate focus for sector recovery should be to provide financial support (through microfinance products, matching grants, microinsurance) to existing small businesses that are able to operate but face a liquidity crunch, which is aggravated due to a decrease in tourism activity in the affected areas. The tourist footfall has improved during October[44] but is still below the optimal levels typically recorded during this season. Public sector recovery efforts for the tourism sector should focus on enterprises that provide employment and livelihoods to the local communities. Equally important is to strengthen the communication infrastructure through the 24/7 helplines and social media handles for tourists traveling to these areas. Medium to long-term activities need to focus on resilience of the sector, strengthening of the enforcement of building codes and anti-encroachment acts, and spatial planning of tourism zones.

43 Long-term jobs include contractual jobs spanning one year or longer. Jobs losses factor in a workforce that is self-employed or hired by transport, travel, and tourism industry, including tour operators, car/jeep rentals, hotels, restaurants, and travel agents.
44 Tourist footfall in KP province during October 1–19, 2022, was 114,086, which is far below the destinations' capacity.

# Cross-cutting

Photo credit: UNDP

# Social Protection, Livelihoods, and Jobs

### Loss: PKR 130 billion (US$607 million)

The floods have caused destruction to lives and livelihoods in all provinces. Preliminary estimates suggest that, without decisive relief and recovery efforts to help the poor, the national poverty rate may increase by 3.7 to 4.0 percentage points, pushing between 8.4 to 9.1 million people into poverty. This is likely to make them prone to adopting negative coping strategies, such as non-fulfillment of health and nutritional needs, taking children out of school, engaging in child labor, and selling productive assets—all of which can make households spiral into poverty with intergenerational impacts. The sector assessment looks at aspects of protection and promotion with two main areas of impacts: livelihoods

and human capital. The sector losses are confined to income losses of the population exposed to the floods. A total of 4.3 million workers across all provinces have been affected, with varied income losses due to severity and duration of the impact.

### Recovery and Reconstruction Needs: PKR 361 billion (US$1,683 million)

The sector strategies include emergency employment services, skills development initiatives, and employment intensive investments for livelihoods and jobs-related reconstruction and rehabilitation activities. On the social assistance side, multipurpose humanitarian support; conditional cash transfers linked to education, health, and nutrition; and workfare programs are the focus of attention.

# Governance

### Damage: PKR 13 billion (US$60 million)
### Loss: PKR 5 billion (US$23 million)

The 2022 floods have wreaked havoc on both the state apparatus and societal formations. While the floods have affected much of the country, the level of destruction in Sindh and Balochistan is of unprecedented scale and intensity. The losses and damage suffered by the public service of the Criminal Justice System is cause for immediate concern, given their centrality in the provision of justice services to vulnerable citizens residing in these relatively underdeveloped regions. Data collected from government counterparts tells us that Sindh has been hit the hardest with 1,395 buildings damaged, followed by Balochistan (796), KP (135), Punjab (59), and other areas (11).

### Recovery and Reconstruction Needs: PKR 19 billion (US$88 million)

Local governments already constrained for resources and capacities are in a potentially grave situation, with the resulting impact of losses further deteriorating service delivery and, in turn, citizen–state trust. Moreover, as disasters do not affect the population equally, it is even more important for governance structures and mechanisms to be gender and inclusion responsive. Corruption in emergency procurement reduces the resources available for life-saving operations, lowers the quality of products and services provided, and diverts aid from those who need it most. It also negatively influences public support for emergency relief and medium-term rehabilitation activities. It is therefore essential that both immediate and medium-term actions are taken by the federal and provincial governments and development partners along with local agents (public and private) to address key issues. The recovery strategy also emphasizes the need of better coordination, effective aid management, and building a comprehensive monitoring and implementation framework with clearly defined results to help governments and donors monitor activities at both micro and macro levels. A centralized response may be more viable, given the National Command and Operation Center experience under COVID-19. Key policy recommendations include: (i) strengthen the institutional framework and coordination for disaster management, eliminating institutional overlaps by clearly delineating the roles and responsibilities of all levels of government in the National Flood Response; (ii) prioritize the restoration of services and infrastructure for rule of law and governance institutions; (iii) develop a framework for climate sensitive planning and budgeting at national and provincial levels; (iv) support the provincial and federal governments in speeding up the re-prioritization of public investments; (v) build local capacities and systems for improved public financial management, procurement, and accountability systems; (vi) strategic engagement of community-based organizations and CSOs with Provincial and District Disaster Management Authorities for post-disaster monitoring and coordination; and (vii) strategic risk communications during the emergency response, recovery, and relief phase.

## Social Sustainability, Inclusion, and Gender

### Damage: PKR 4.4 million (US$0.02 million)

The 2022 floods have severely impacted livelihoods for socially excluded and marginalized groups. These disproportionately vulnerable populations, primarily comprised of women, include landless farmers, on- and off-farm agricultural and livestock/dairy workers, and home-based workers connected to agriculture or other sectors, mostly manufacturing. Women and girls are facing manifold increases in both unpaid domestic and care work, and the analysis further noted that they also face increased threats of violence. This is accompanied by limited access to health, education, and social protection, and the depletion of personal assets to support basic household needs. Other social groups facing discrimination and lack of access to relief include minorities (ethnic, religious, caste), transgender persons, older people, people with disabilities, people living with HIV/AIDS, young people, children and infants, and refugees and temporarily displaced populations. Their access to relief is severely limited and not effectively factored into relief planning and delivery. Further, a breakdown of social relations was noted, closely linked to displacement.

This has severely impacted cohesion within communities. Rising tensions have been exacerbated by insufficient, irregular, uncoordinated, and inequitable aid, and relief distribution. Violence and conflict are a frequent occurrence, including over aid. There are widespread concerns over elite capture and aid mismanagement.

### Recovery and Reconstruction Needs: PKR 21 billion (US$96 million)

Recommended short-term relief and recovery strategies include: (i) provide immediate relief to underserved communities with gender balanced humanitarian response teams (minimum 40 percent women), and strengthened coordination with gender machineries and stakeholders; (ii) support sex, age, and disability disaggregated data collection, and ongoing needs' assessments to identify critical gaps; (iii) strengthen communications and outreach, with clear information about aid distribution and advocacy, and monitoring and evaluation, that prioritizes the meaningful participation of excluded and special needs groups; (iv) rollout psychosocial support services and programs for affected communities. Medium and long-term recommendations include: (i) expand protection services against GBV and abuse by establishing and/or strengthening crisis centers and other relevant structures, building institutional capacity to address GBV and the specific needs of children, persons with disabilities, and the elderly; (ii) conduct behavioral change interventions for GBV prevention; (iii) raise awareness of government service providers on the social impacts of disasters on vulnerable and marginalized communities and the risks and impacts of maladaptation; (iv) establish and/or strengthen community-led platforms to expedite recovery efforts by vulnerable groups and communities to fast-track recovery; (v) train local authorities on inclusive post-disaster assessments, gender-responsive early warning, evacuation and resettlement, and related communication strategies as part of further disaster preparedness efforts; and (vi) provide gender-responsive budgeting for all plans and budgets, specifying stakeholders, indicators, and benchmarks for achieving gender equality aims.

## Environment and Climate Change

### Damage: PKR 4 billion (US$18 million)
### Loss: PKR 6 billion (US$30 million)

The estimation includes damage and loss in forestry, protected areas, and from landslides. Forestry accounts for approximately 60 percent of total environmental damages and almost 99 percent of losses. Sindh sustained the highest damage in the forest sector, amounting to PKR 1.8 billion (US$8.4 million), representing 77 percent of total forest damages. Damage from landslides and soil erosion in residential areas represent 29 percent of total environmental damages. Protected areas, wildlife, and infrastructure in national parks account for around 11 percent of overall damages. Chemical spills and contaminated sites were reported, but no environmental surveys have been conducted to characterize and quantify damages. These quantitative estimates are expected to be substantially underestimated due to the paucity of environmental data and inherent challenges in estimating ecosystem services. The full extent of damage to forests, biodiversity, land, and pollution clean-up is yet to be fully accounted and requires more detailed investigations.

### Recovery and Reconstruction Needs: PKR 35 billion (US$164 million)

Ecosystem-based adaptation and nature-based solutions are key approaches in addressing floods and droughts that are exacerbated by climate change in Pakistan. Such approaches need to be urgently accelerated to help build resilience at the community and national levels. The recovery and reconstruction needs estimate includes those stemming from flood damages, enhancing natural capital in the most impacted and high-risk sites, and strengthening governance capacities to provide environmental oversight of the reconstruction. Sector-specific and environment-related needs, including rebuilding climate-resilient infrastructure, are assumed to have been separately captured in the relevant sectoral assessments as they are not easily apportioned out and to avoid double counting. Beyond the immediate needs identified in this assessment, an expanded environmental recovery strategy is required to achieve an appreciable level of resilience to climate change induced disasters and check the pace of environmental degradation and pollution. Such a strategy should be aligned with the government's stated environmental strategies and policy objectives for ecological restoration such as the "Living Indus Initiative." This broader environmental resilience strategy has an estimated cost of at least PKR 389 billion (US$1.8 billion). Its three main components are: (i) ecosystem-based restoration and adaptation in vulnerable landscapes and watersheds (PKR 172 billion; US$800 million); (ii) pollution reduction and waste management (PKR 140 billion; US$652 million); and (iii) strengthening environmental governance (PKR 78 billion; US$363 million).

## Disaster Risk Reduction and Resilience

### Damage: PKR 1.0 billion (US$4.7 million)

This amount only accounts for damage to buildings and equipment of manned weather observatories of the Pakistan Meteorological Department (PMD) and flood level gauges of the Water and Power Development Authority and the Hydrology Irrigation Division, KP. Compared to the baseline total, 48 percent of the PMD's observatories were damaged. Damage to weather monitoring stations and devices is likely to impair weather forecasting and flood warning capacity of the relevant government offices, which could result in further damage and loss due to poor forecasts. No losses were calculated, as no disruptions were reported for the disaster response services of the sector.

### Recovery and Reconstruction Needs: PKR 35 billion (US$161 million)

The estimate comprises reconstruction and expansion of the flood risk monitoring and early warning systems and strengthened institutional and community capacity for disaster planning and response over the next five years. It excludes the costs of flood risk reduction infrastructure (embankments, levees, drainage) included within the Water and Irrigation Sector section. The recovery strategy approach centers around enhancing government (particularly district-level government) and community capacity to plan and respond to disasters. The immediate renewal and upgrading of the National Disaster Management Plan (2012–2022) and National Flood Protection Plan – IV will inform key details for recovery for the sector. The recovery needs include strengthening hazard mapping, monitoring, and early warning systems; mainstreaming disaster risk reduction, disaster risk management, and climate resilience in planning systems and processes; and upgrading evacuation shelters and warehousing.

# Annex 1:
## List of Acknowledgments for the PDNA Stakeholder Engagement Meetings

**Public Entities and Government Affiliated Organizations:** Pakistan Red Crescent Society (PRCS); Sui Northern Gas Pipelines (SNGPL).

**Rural Support Programs:** Aga Khan Rural Support Programme (AKRSP); Balochistan Rural Support Programme; Gilgit Baltistan Rural Support Programme (GBRSP); Rural Support Programmes Network; Sarhad Rural Support Programme (SRSP); Thardeep Rural Development Programme (TRDP).

**Local NGOs/CSOs/Associations/Youth Groups:** Akhuwat Islamic Microfinance; Alternative Law Collective; Area Development Organization (ADO); Association for Integrated Development (AID) Balochistan; Doaba Foundation; Gender and Empowerment Organization; Hashoo Foundation; HOPE'87 Pakistan; HUJRA Village Support Organization; Khari Shareef Welfare Society (KSWS); MEHER Balochistan; Pakistan Fisherfolk Forum (PFF); Publishing Extension Network (PEN); Rupani Foundation; Saibaan Development Organization; Social Action Bureau for Assistance in Welfare & Organizational Networking (SABAWON); Veer Development Organization (VDO); Water, Environment and Sanitation Society (WESS); Women Welfare Organization; Youth Organization Balochistan.

**Think Tanks/Research/Academia:** The Agriculture University, Peshawar; Balochistan University of Information Technology, Engineering and Management Sciences (BUITEMS); Centre for Disaster Preparedness and Management, University of Peshawar; Commission on Science and Technology for Sustainable Development in the South (COMSATS) University; Global Change Impact Studies Centre (GCISC); Lahore University of Management Sciences (LUMS); Mehran University of Engineering and Technology; Sustainable Development Policy Institute (SDPI); Independent Journalists.

**International Non-governmental Organizations:** International Union for Conservation of Nature (IUCN); Islamic Relief; Muslim Aid UK; Muslim Hands; World Wildlife Fund (WWF).

**UN/International Organizations:** Food and Agriculture Organization (FAO); International Federation of Red Cross and Red Crescent Societies (IFRC); International Labour Organization (ILO); International Organization for Migration (IOM); Italian Agency for Development Cooperation (AICS); Japan International Cooperation Agency (JICA); United Nations Environment Programme (UNEP); United Nations Educational, Scientific and Cultural Organization (UNESCO); United Nations Children's Fund (UNICEF); United Nations Industrial Development Organization (UNIDO); United Nations Office for Project Services (UNOPS); United Nations Entity for Gender Equality and the Empowerment of Women (UN Women); World Health Organization (WHO), World Food Programme (WFP), United Nations Human Settlement Program (UNHABITAT), International Labour Organization (ILO), United Nations Population Fund (UNFPA), United Nations High Commission for Refugees, (UNHCR), United Nations Program on HIV/SIDA (UNAIDS).

Ministry of Planning
Development &
Special Initiatives