INCLUSIVE BY DESIGN
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PDMA

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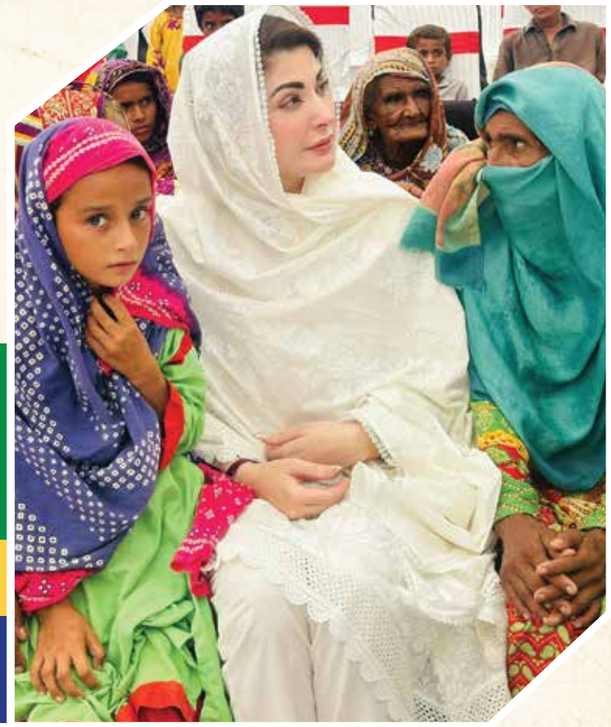
PDMA

PUNJAB
MONSOON CONTINGENCY
PLAN 2025
GENDER RESPONSIVE



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CHAIRPERSON PROVINCIAL DISASTER MANAGEMENT AUTHORITY

As we look ahead to the 2025 monsoon season, our collective responsibility to safeguard the people of Punjab against the rising threats of climate change has never been more urgent. The impacts of extreme weather such as intense rainfall, flash floods, heatwaves, and dry spells are becoming more frequent and severe. In response, the Government of Punjab is committed to a proactive and risk-informed approach to disaster preparedness and response.

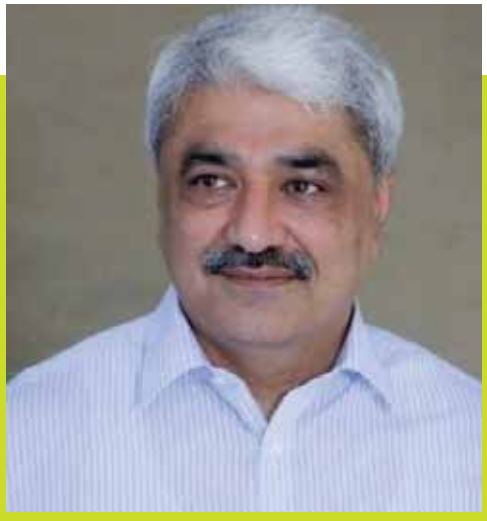
The Punjab Monsoon Contingency Plan 2025 is a strategic initiative that reflects this commitment. It provides a comprehensive framework to strengthen coordination, enhance early warning systems, and ensure timely action at all administrative levels. It also reinforces the critical role of the Provincial Disaster Management Authority (PDMA) Punjab in leading preparedness efforts, utilizing modern forecasting tools, and ensuring that communities, especially those in vulnerable areas, are equipped with timely information and support.

Our vision is to build a climate-resilient Punjab where institutions are empowered, resources are pre-positioned, and citizens are well-informed. This plan aligns with national disaster risk reduction goals and global best practices, recognizing that the safety and well-being of every individual must remain at the center of governance and planning.

As we prepare for a monsoon season that may bring both challenges and uncertainties, I call upon all government departments, civil society partners, and the people of Punjab to stay alert, follow official advisories, and actively participate in local preparedness efforts. Disaster resilience is a shared responsibility. By working together, we can minimize risks, protect lives, and strengthen the foundations of a secure and sustainable Punjab.

MARYAM NAWAZ SHARIF
CHIEF MINISTER, PUNJAB

MINISTER INCHARGE PDMA PUNJAB



Punjab continues to face the increasing impacts of climate change, with more frequent and intense weather events such as floods, heatwaves, and droughts. These hazards pose serious threats to human lives, agriculture, infrastructure, and the overall economy. As we prepare for the 2025 monsoon season, it is crucial to adopt a proactive approach that prioritizes early preparedness and coordinated response.

The Monsoon Contingency Plan 2025 has been developed in response to these evolving risks. It builds on lessons from past disasters including the devastating floods of 2010 and the intense monsoon of 2022 and outlines practical strategies to manage potential emergencies. This plan identifies vulnerable districts, strengthens early warning systems, and ensures that key resources and institutional capacities are in place ahead of time.

Effective implementation of this plan requires close collaboration across all government departments, local administrations, and communities. Under the leadership of PDMA Punjab, efforts are being made to improve forecasting, pre-position emergency supplies, and raise public awareness to minimize the impact of monsoon-related hazards.

By working together and staying alert, we can significantly reduce disaster risks and strengthen the resilience of our people. The Monsoon Contingency Plan 2025 reflects our collective commitment to protecting lives and building a safer, climate-resilient Punjab.

KHAWAJA SALMAN RAFIQUE
MINISTER INCHARGE PDMA, PUNJAB

CHIEF SECRETARY PUNJAB

Natural disasters have long challenged human societies, and today, the risks are growing due to the intensifying impacts of climate change. Recognizing this, the Provincial Disaster Management Authority (PDMA) and District Disaster Management Authorities (DDMAs) are leading efforts to enhance disaster resilience across Punjab.

The Punjab Monsoon Contingency Plan 2025 has been developed to address expected and emerging monsoon-related threats. It outlines key vulnerabilities, available resources, stakeholder responsibilities, and practical response mechanisms. Designed in collaboration with partner agencies and departments, the plan ensures timely, efficient, and coordinated action.

Disaster risk management is an ongoing process. The Government of Punjab remains committed to regularly updating strategies, strengthening institutional capacity, and learning from past experiences. All departments and partners are urged to implement this plan effectively, with a shared focus on protecting lives, infrastructure, and livelihoods.

I also encourage continuous community engagement, public awareness, and the integration of inclusive practices, particularly for vulnerable groups such as women, children, the elderly, and persons with disabilities. A resilient Punjab is not possible without the active participation of every segment of society.

Together, through preparation and partnership, we can build a safer, more resilient Punjab

ZAHID AKHTAR ZAMAN
CHIEF SECRETARY, PUNJAB

SMBR/RELIEF COMMISSIONER PUNJAB

Today, humanity faces an evolving crisis marked by increasingly frequent and diverse disasters from floods and droughts to smog, pandemics, and locust infestations. These growing threats demand a shift from a flood-centric focus to a broader, integrated approach that addresses the full range of monsoon-related and environmental hazards.

The Monsoon Contingency Plan 2025 reflects this strategic shift. It offers a comprehensive framework for disaster preparedness, response, and recovery across Punjab, emphasizing multi-sectoral coordination and collective action. Effective disaster management requires close collaboration among federal and provincial authorities, district administrations, humanitarian partners, and the private sector.

At the core of this effort is the Provincial Disaster Management Authority (PDMA) Punjab is expanding its mandate including early warning, risk assessment, emergency response, and post-disaster recovery. The Government of Punjab is committed to strengthening PDMA's capacity through institutional support, advanced forecasting tools, and strategic planning.

With rising climate risks, urbanization, and environmental degradation, PDMA continues to play a vital role in safeguarding communities. Disaster risk reduction is now central to development and planning in Punjab, reinforcing our vision for a climate-resilient and disaster-ready province.

NABEEL JAVED
SMBR/RELIEF COMMISSIONER, PUNJAB

DIRECTOR GENERAL (DG) PDMA

On behalf of PDMA Punjab, I am pleased to present the Punjab Monsoon Contingency Plan 2025 a strategic document that reaffirms our unwavering commitment to advancing disaster preparedness, strengthening effective response, and fostering climate resilience across the province.

Punjab's risk landscape is being reshaped by the accelerating impacts of climate change, rapid urbanization, and emerging socio-economic vulnerabilities. The growing frequency and intensity of hydro-meteorological hazards particularly floods demand adaptive, integrated, and forward-looking risk management strategies.

Under the leadership of PDMA Punjab, this year's contingency plan has been prepared through extensive coordination with provincial departments, district administrations, and key partners. It integrates lessons learned from past disasters while aligning with international frameworks and best practices in disaster risk reduction. A key emphasis of this plan is on gender-inclusive and socially responsive preparedness and response. Our approach seeks to ensure that the needs and priorities of pregnant and lactating women, persons with disabilities, and other vulnerable groups are systematically addressed. Inclusive risk management is central to building resilient communities and safeguarding lives and livelihoods.

As we move toward the 2025 monsoon season, I call upon all government departments, district authorities, and private sector partners to uphold a spirit of vigilance, collaboration, and accountability. Together, through coordinated and inclusive efforts, we can mitigate disaster impacts and contribute to a safer, more resilient Punjab for all.

IRFAN ALI KHAN KATHIA
DIRECTOR GENERAL PDMA, PUNJAB

ACKNOWLEDGMENT

The Punjab Monsoon Contingency Plan 2025 stands as a landmark achievement in the domain of disaster preparedness and risk reduction. This policy document was developed under the gracious patronage of **Mr. Nabeel Javed,** Senior Member Board of Revenue / Relief Commissioner Punjab, whose unwavering commitment to institutional strengthening and climate resilience provided the foundational impetus for this endeavor. The formulation of this comprehensive plan was also guided by the strategic vision of **Mr. Irfan Ali Kathia,** Director General, PDMA Punjab, whose clarity of purpose and technical foresight were instrumental in shaping its scope and structure.

This monumental initiative was conceived, designed, and led by **Mr. Nisar Ahmed Sani,** Director (Operations), PDMA Punjab, whose exceptional expertise and operational acumen transformed the contingency planning process into a structured, inclusive, and forward-looking exercise. For the first time in Punjab's history, contingency plans were obtained from all districts in a standardized format, rigorously reviewed, and technically validated to ensure that they reflect the ground realities and potential vulnerabilities of each region. Each plan was critically examined, discrepancies and gaps were clearly communicated, and improved submissions were secured through consistent follow-up and technical support. Notably, the 2025 plan is the first to embed a gender-responsive and disability-inclusive lens, integrating the needs of women, children, and persons with disabilities across all phases of disaster risk management. This inclusive approach reinforces PDMA's commitment to equitable resilience and community-centered planning.

We extend our sincere appreciation to **Ms. Iqra Basit,** NGO Coordinator (Assistant GIS), and **Ms. Fiza Hafeez,** Assistant GIS, for their tireless support, meticulous coordination, and unwavering commitment throughout the process. The valuable contributions of the PEOC team in facilitating data sharing and coordination were also instrumental in the successful development of this plan. PDMA Punjab also acknowledges the collaboration of stakeholders, including provincial departments and federal institutions, whose inputs and timely data sharing were vital to the development of this Contingency Plan 2025.

EXECUTIVE SUMMARY

PDMA Punjab's Monsoon Contingency Plan 2025 presents a unified, forward-looking framework for managing climate-induced hydro-meteorological disasters, with a particular focus on floods resulting from riverine overflow, urban drainage failures, flash floods, and hill torrents. The plan embodies a proactive shift toward anticipatory risk management, integrating past experiences, future projections, and contemporary disaster risk reduction (DRR) strategies to safeguard lives, assets, and ecosystems across the province.

In anticipation of a dynamic monsoon season shaped by increasing climate variability, the plan operationalizes a round-the-clock monitoring and response mechanism, with 24/7 control rooms activated at both the provincial and district levels. These Emergency Operations Centers serve as centralized command hubs, enabling real-time decision-making, synchronized response efforts, and inter-agency coordination, including civil administration, military support, humanitarian actors, and technical partners.

Drawing critical lessons from the 2024 monsoon season, the 2025 Plan underscores the imperative of early action and preparedness. Enhanced forecasting tools, Multi-Hazard Vulnerability and Risk Assessment (MHVRA), and flood simulation models have been employed to identify hazard-prone districts and tehsils, ensuring timely dissemination of early warnings down to the community level through SMS, media, mosques, and digital dashboards.

Key pillars of the Punjab Monsoon Contingency Plan 2025 include:

- Risk Assessments informed by historical data, climate projections, hydrological modeling, and GIS-based hazard overlays
- Institutional Preparedness spearheaded by PDMA, DDMAs, and sectoral departments, guided by clear standard operating procedures (SoPs)
- Inclusive Planning Measures, ensuring that disaster preparedness and response efforts actively include and protect women, children, and persons with disabilities (PWDs). This includes accessible early warnings, gender-segregated safe shelters, inclusive relief distribution, and dedicated health and psychosocial support services
- Pre-positioning of Critical Relief Supplies, with real-time inventory tracking across divisional warehouses to ensure rapid deployment and avoid duplication
- Operational Clarity through the delineation of roles and responsibilities at the divisional, and district levels reinforced via mock drills, training sessions, and simulation exercises
- Inter-agency Sectoral Working Groups, co-chaired by PDMA and leading humanitarian partners, to streamline multi-sectoral response across WASH, Shelter, Health, Food Security, Protection, and Livelihood sectors

Ultimately, the Monsoon Contingency Plan 2025 reflects PDMA Punjab's commitment to a holistic disaster management paradigm one that transcends reactive response and advances toward a culture of preparedness, resilience, and sustainability. By institutionalizing anticipatory action, inclusive governance, and adaptive risk management, the Plan steers Punjab toward a more secure and climate-resilient future.

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1.1 INTRODUCTION

Punjab, with its diverse topography and extensive riverine networks, remains highly susceptible to seasonal flooding, particularly during the monsoon period. The vulnerability is intensified by a combination of factors, including erratic weather patterns, inadequate drainage systems, encroachments along natural waterways, rapid urbanization, and the growing impacts of climate change. Each year, monsoon-triggered floods pose a recurring threat to life, infrastructure, agriculture, and livelihoods, especially in low-lying districts along the Indus River and its tributaries.

The flood risk landscape of Punjab is shaped not only by hydrometeorological hazards but also by socio-economic vulnerabilities and environmental degradation. Densely populated urban centers, informal settlements, and communities with limited access to early warning systems or resilient infrastructure face disproportionate risks. Moreover, the frequency and intensity of extreme weather events are increasing, making flood preparedness and resilience planning more urgent and complex.

Recognizing these evolving challenges, the 2025 Monsoon Contingency Plan adopts a risk-informed approach to address Punjab's dynamic flood profile. It integrates historical flood data, climate projections, and district-specific risk assessments to identify high-risk zones and prioritize interventions. Through close coordination with the line departments, the plan ensures the incorporation of seasonal forecasts and real-time hydrological data to enhance anticipatory actions and facilitate early warnings.

This strategic overview underscores the critical need for proactive, inclusive, and multi-sectoral engagement to mitigate flood risks. By contextualizing the flood risk landscape within a broader disaster risk reduction (DRR) framework, the Plan enables decision-makers and frontline responders to implement timely, targeted, and equitable measures that protect lives and strengthen community resilience across Punjab.

1.2 GEOGRAPHICAL AND DEMOGRAPHIC OVERVIEW

Punjab, famously known as "the land of five rivers" Jhelum, Chenab, Ravi, Beas, and Sutlej plays a crucial role in Pakistan's agricultural economy. These rivers, in conjunction with the mighty Indus River that traverses several regions of the province, deposit nutrient-rich alluvium across the plains, significantly boosting the province's agricultural productivity. Spanning an area of 205,345 square kilometers, Punjab is the second largest province of Pakistan by land area and contributes 25.9% to the country's total landmass. The topography of Punjab is diverse, featuring vast alluvial plains that form the heart of its farming regions, the elevated and rugged Potohar Plateau in the northeast, and arid zones including the Cholistan Desert in the southeast. To the north and northwest, the foothills of the Himalayas provide not only ecological diversity but also host popular tourist destinations such as Murree and the surrounding hill stations (Figure 1).

According to the 2023 census, Punjab's population has surged to approximately 127.7 million, making it the most populous province in Pakistan and home to about 53% of the nation's total population. With a population density of around 622 persons per square kilometer, the province faces significant challenges in managing urbanization and resource distribution. Roughly 40.7% of Punjab's residents live in urban centers, while the remaining 59.3% inhabit rural areas many of which are highly vulnerable to seasonal flooding. This demographic and geographical profile underscores the critical need for an effective and inclusive flood preparedness and response strategy, as outlined in the 2025 Monsoon Contingency Plan.

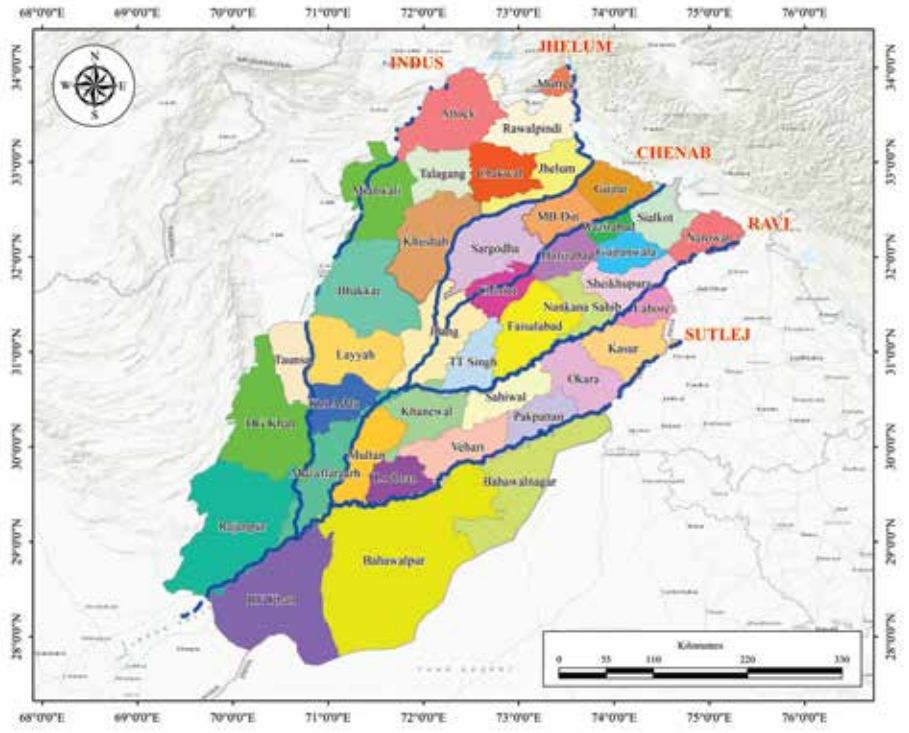


Figure 1 Geographical Map of Punjab, Pakistan

1.3 CLIMATE CONDITIONS

Punjab Province experiences a wide range of climatic conditions due to its diverse topography. Most of the region is characterized by extremely hot summers and cold, foggy winters, particularly across the vast alluvial plains. In recent years, temperature fluctuations have intensified, with summer temperatures regularly ranging from 30°C to 42°C and occasionally spiking up to 48°C in the southern districts (Figure 2). In contrast, winter temperatures can drop as low as -5°C in the northern and central regions, with typical lows ranging from -1°C to 5°C.

The province receives the majority of its annual rainfall during the monsoon season, which typically begins in late June and extends through the first half of September. However, climatic irregularities and erratic rainfall patterns notably observed since the early 1970s have become more prominent due to ongoing climate change, posing new challenges to disaster preparedness and resource management.

Rainfall distribution across Punjab varies significantly. The northwestern regions, particularly those in the foothills of the Himalayas, such as Murree in Rawalpindi Division, receive the highest annual rainfall, averaging around 1778.2 mm. Similarly, Sialkot District in the northeast sees an annual average of 1004 mm. In contrast, the southern divisions, like Bahawalpur, are predominantly arid, with annual rainfall averaging just 120 mm. The Precipitation Profile map of Punjab with annual precipitation (Figure 3). These southern areas are also home to desert landscapes, including parts of the Cholistan Desert, and share borders with Sindh Province and India.

This geographic and climatic diversity underscores the necessity for localized and adaptive strategies within the 2025 Monsoon Contingency Plan, particularly as the province faces heightened risks of riverine, flash, and urban flooding due to both natural and anthropogenic factors.

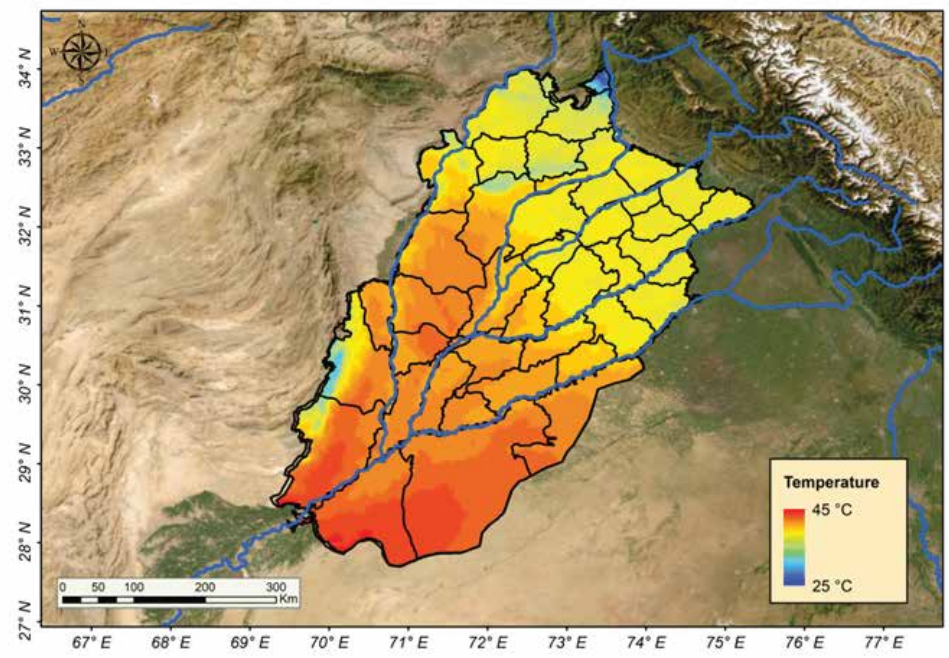


Figure 2 Temperature Profile of Punjab, for May 2025 (Dataset Name: CRU-TS v.4.06, WorldClim)

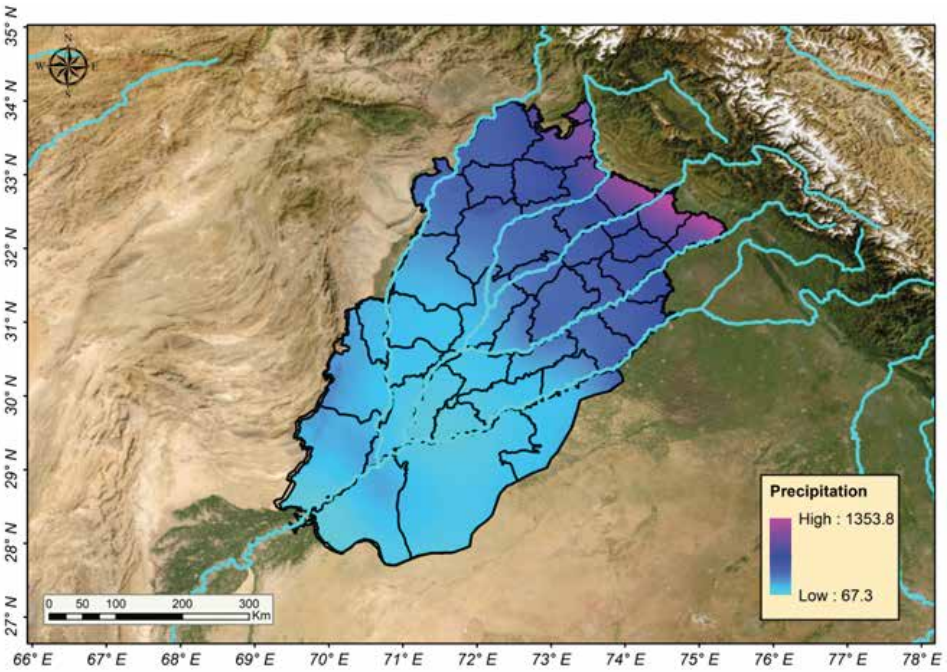


Figure 3 Precipitation Profile of Punjab, for May 2025 (Dataset Name: CRU-TS v.4.06, WorldClim)

1.4 TYPES OF FLOODS

The province of Punjab experiences several types of floods due to its diverse geography and climatic conditions. The primary types of floods in the region include:

1.4.1 RIVERINE FLOODS

Monsoon winds are a critical driver of severe weather in Punjab, drawing dense cloud formations to the central and northern regions of the province. These clouds release their moisture as heavy rainfall in catchment areas, leading to river flooding, particularly when combined with rapid glacier melt from the northern territories. This situation results in significant flooding in Punjab, located downstream. The districts most vulnerable to these floods include Mianwali, Bhakkar, Layyah, Dera Ghazi Khan, Rajanpur, Muzaffargarh, Rahim Yar Khan, Jhelum, Mandi Bahauddin, Sargodha, Khushab, Jhang, Multan, Gujrat, Hafizabad, Chiniot, Gujranwala, Sialkot, Kasur, and Narowal, among others. These areas proximity to the major rivers of Punjab places them at a heightened risk of frequent and intense flooding events.

1.4.2 FLASH FLOODS

Flash floods, intensified by severe cloud bursts and thunderstorms, have become a frequent and severe threat in the hilly districts of Dera Ghazi Khan, Mianwali, and Rajanpur. Comparable in impact to riverine floods, these flash floods occur when heavy rainfall from cloud bursts rapidly accumulates water that the terrain cannot absorb. This runoff swiftly escalates into hill torrents and nullahs, rapidly overwhelming the landscape and causing water levels to rise precipitously. The sudden onset of flash floods leaves little time for effective response and evacuation, posing significant risks to affected areas.

1.4.3 URBAN FLOODING

Urban flooding is increasingly common in major Pakistani cities, exacerbated by factors such as drainage overflow, environmental pollution, unplanned development, and inadequate local governance. A notable example is Rawalpindi's Lai Nullah, where heavy rainfall in the Margalla Hills leads to rapid water surges, posing significant risks to residents. Extensive funds are allocated by the district government to mitigate these flash floods and protect both infrastructure and the public. Cities like Lahore, Gujranwala, Sialkot, Narowal, and Sheikhupura also face similar urban flooding challenges due to overflowing drainage canals like Nullah Palkhu, Deg, Aik, Bhed, and Basantar.

Pakistan ranks among the world's most disaster-prone nations, particularly vulnerable to the impacts of climate change which have increased the frequency and severity of natural disasters such as floods, droughts, extreme temperatures, and pest outbreaks. Over recent years, Pakistan's vulnerability to floods has escalated, with significant flooding events recorded in 2010, 2011, 2012, and 2014, highlighting its high exposure to climate-related hazards. Punjab, being downstream, suffers acutely from these disasters.

1.5 FACTORS CONTRIBUTING TO INTENSIFIED FLOODING

Flooding in Punjab is the result of a complex interplay between natural processes and human-induced activities. In recent years, changing climate dynamics and increasing anthropogenic pressures have significantly heightened flood risks across the province. The key contributing factors are outlined below:

1.5.1 PHYSICAL FACTORS

Several natural and geographical factors intensify the severity and frequency of flooding in Punjab:

- Topography and River Network: Punjab's vast alluvial plains and dense river network make it highly susceptible to riverine flooding.
- Heavy and Prolonged Rainfall: Intense monsoon downpours and prolonged precipitation periods increase surface runoff, overwhelming natural and artificial drainage systems.
- Glacier Melt and Glacial Lake Outburst Floods (GLOFs): Melting glaciers in the northern highlands, driven by rising temperatures, contribute to increased river discharge.
- Soil Saturation and Reduced Infiltration: Waterlogged soils from persistent rains reduce the land's ability to absorb further moisture, accelerating surface runoff.
- Siltation in Rivers and Nullahs: Accumulated sediment in riverbeds reduces channel capacity, causing overflow during high discharge periods.

1.5.2 HUMAN-INDUCED FACTORS

Human-induced activities have amplified flood hazards across both urban and rural areas:

- Encroachment on Floodplains and Riverbanks: Unregulated construction and settlements within flood-prone zones disrupt natural water flow paths.
- Deforestation and Land Degradation: Loss of vegetation cover in catchment areas reduces water retention, increasing runoff velocity and volume
- Inadequate Waste Management: Blocked drainage systems due to solid waste accumulation hinder water flow, particularly in urban areas.
- Improper Urban Planning and Infrastructure: Lack of proper stormwater management systems and drainage in growing cities contributes to urban flooding.
- Poor Maintenance of Embankments and Nullahs: Delays in desilting and reinforcement of flood protection structures increase vulnerability to breaches.

1.5.3 EMERGING CLIMATE-RELATED FACTORS

New challenges linked to climate variability are emerging as significant contributors to flooding:

- Erratic Monsoon Patterns: Shift in monsoon onset, duration, and intensity due to climate change leads to unpredictable and more extreme weather events.
- Sea-Level Rise and Backwater Effect: Though inland, Punjab's floodplains are indirectly affected by backflow from downstream regions during high river discharge combined with sea-level changes.
- Frequent Extreme Weather Events: Increasing frequency of cloudbursts, microbursts, and short-duration high-intensity rainfall events exacerbate flash flooding.

1.6 MAJOR RIVERS AND BARRAGES

In Punjab, the confluence of the five rivers Sutlej, Ravi, Chenab, Jhelum, and Indus occurs at or near Panjnad in the district of Bahawalpur. Post-confluence, the rivers Sutlej, Ravi, Chenab, and Jhelum merge into the Indus, which then flows as a single major river through Sindh Province. The rivers sand barrages of Punjab is shown in the Figure 4. Over the years, numerous bar rages and head-works have been constructed along these rivers to manage water flow and distribution. These infrastructures play a crucial role in controlling the river systems and are pivotal in regional water management strategies.

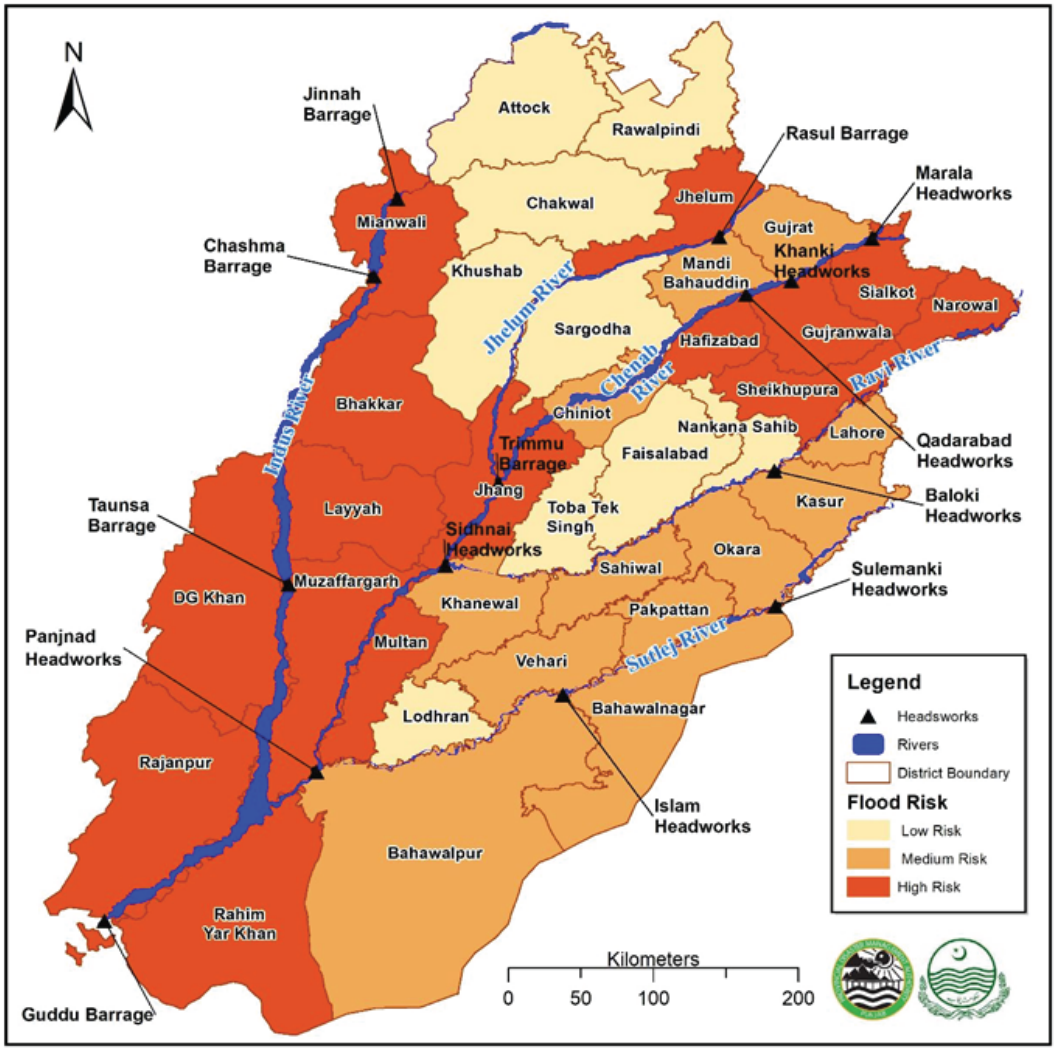


Figure 4 District Punjab Major Rivers and Barrages

1.6.1 RIVER INDUS

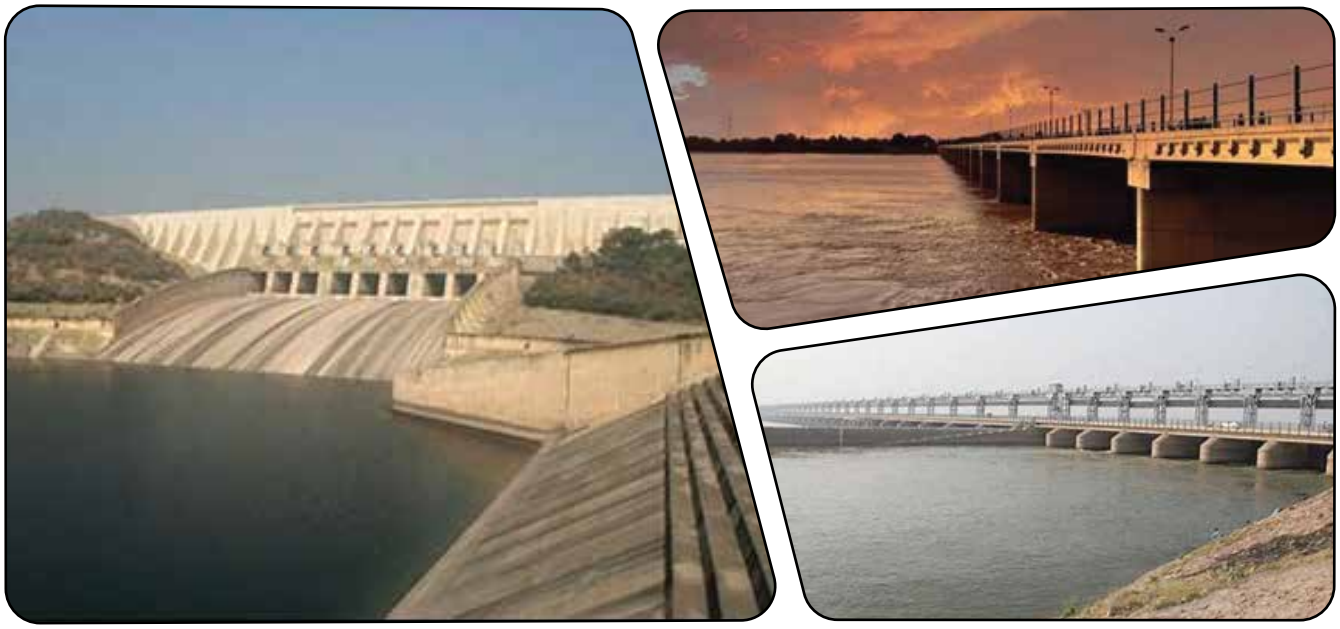
The Indus River, originating near Lake Manasarovar on the Tibetan Plateau in China, is a Trans-Himalayan river and the longest in Pakistan. It receives contributions from eastern tributaries such as the Jhelum, Chenab, Ravi, and Sutlej, as well as western tributaries including the Kabul, Kurram, Swat, and Gomal rivers. Several significant engineering structures have been erected along the Indus, including the Tarbela Dam and the Jinnah, Chashma, Taunsa, Guddu, Sukkur, and Kotri Barrages (Figure 5). As of the latest available data from 2018, the Indus River spans approximately 3,180 kilometers, with 547 kilometers running through Punjab Province. The riverbanks are fortified with 811 kilometers of bunds and 131 spurs. Key barrages like Jinnah, Chashma, Taunsa, and Guddu play a crucial role in managing the river's flow and mitigating flood risks. The districts of Mianwali, Bhakkar, Layyah, Muzaffargarh, Dera Ghazi Khan, Rajanpur, and Rahim Yar Khan in Punjab have been particularly impacted by floods along the Indus in 2010 and 2014.

Figure 5 Dams and Barrages of River Indus

1.6.2 RIVER JHELUM

The Jhelum River originates from the Vernag spring located in Western Jammu and Kashmir, in the region administered by India. After joining with the Kishanganga River at Muzaffarabad, it flows south, delineating the border between Azad Kashmir to the east and Khyber Pakhtunkhwa to the west, before continuing into Punjab Province. Significant engineering structures along the river include the Mangla Dam and the Rasul and Trimmu Barrages (Figure 6). According to the latest available data from the Punjab Irrigation Department, the Jhelum River stretches for 363 kilometers within Punjab, with protective bunds extending 155 kilometers and featuring 43 spurs to control the river's flow and mitigate flooding.

Rasul Barrage



Mangla Dam

Trimmu Barrage

Figure 6 Dams and Barrages of River Jhelum

1.6.3 RIVER CHENAB

The Chenab River enters Pakistan near the Marala Headworks, adorned with significant engineering structures such as the Salal and Baglihar Dams in India, and several barrages (Figure 7) including Marala, Khanki, Qadirabad, Trimmu, and Panjnad in Pakistan. This river is bolstered by twelve major tributaries, with eight such as Jammu Tavi, Manavar Tavi, and others, converging with it within Pakistan's borders. The Chenab flows extensively through Punjab's alluvial plain, eventually merging with the Jhelum River at Trimmu, and later with the Ravi and Sutlej Rivers. Spanning a length of 731 kilometers within Punjab, the Chenab has been a source of major floods impacting districts like Gujranwala, Gujrat, Sialkot, Sargodha, Chiniot, Hafizabad, Jhang, Khanewal, and Multan, notably during the 2014 floods.

Marala Headworks

Qadirabad Barrage

Khanki Barrage

Figure 7 Heads and Barrages of River Chenab

1.6.4 RIVER RAVI

The Ravi River, a trans-boundary river, flows from the Lesser Himalayas in India and continues through Eastern Pakistan. Originating in India, it has five major tributaries, including the
Ujh, Bein, Basantar, Deg, and Hudiara Nullahs, with the Deg Nullah being the longest at 256 kilometers. The river's course closely follows the Indo-Pak border, from approximately 15 kilometers downstream of Madhopur in India to 32 kilometers upstream of Shahdra near Lahore, Pakistan. It meanders westward near Kamalia before joining the Chenab River south of Ahmadpur Sial. Key engineering structures along its course include the Madhopur Barrage in India, and the Balloki and Sidhnai Barrages in Pakistan (Figure 8). As of 2024, the Ravi River spans a length of 694 kilometers within Punjab, Pakistan.

Balloki Barrage

Sidhnai Barrages

Figure 8 Barrages of Sutlej

1.6.5 RIVER SUTLEJ

The Sutlej River, originating in the Kailas mountain ranges of Western Tibet near the sources of the Indus, Ganges, and Brahmaputra Rivers, is marked by significant engineering structures. These include the Bhakra, Nangal, Pong, and Pandoh dams in India, and the Rupar, Harike, and Ferozpur barrages, as well as the Sule manki and Islam Barrages in Pakistan (Figure 9) . As of 2024, the Sutlej River stretches for 515 kilometers through Punjab, Pakistan, with protective bunds extending along 406 kilometers of its course, reinforced by 30 spurs to help manage the river flow and mitigate flooding risks.

Sulemanki Barrage Islam Barrage

Figure 9 Barrages of River Sutlej

1.7 MAJOR NULLAHS

As of 2025, the districts of Sialkot and Narowal in Punjab remain highly vulnerable to flood-related incidents due to several significant seasonal watercourses, including Palkhu, Deg, Aik, Basantar, and Bein (Figure 10). These nullahs, typically dry for most of the year, are prone to sudden and intense swelling during periods of heavy rainfall, particularly during the monsoon season. Such surges frequently result in localized flooding, causing damage to agricultural lands, orchards, residential areas, and critical infrastructure. One of the most significant of these is Bein Nullah, located at Shahargarh in Narowal District. It spans approximately 48 km and contributes to inundation in the Shakargarh area. During peak flood events, it discharges into the River Ravi upstream of Jassar Bridge, with a historical maximum discharge recorded at a staggering 143,000 cusecs in 1961. This immense capacity makes it one of the most dangerous nullahs in the region, particularly due to its potential to flood large portions of rural land with minimal warning. Similarly, the Deg Nullah, stretching 160 km through multiple tehsils such as Zafarwal, Chawinda, and Pasrur, recorded a maximum discharge of 75,102 cusecs in 2014, threatening both rural and peri-urban settlements, highlighted in Table 1.

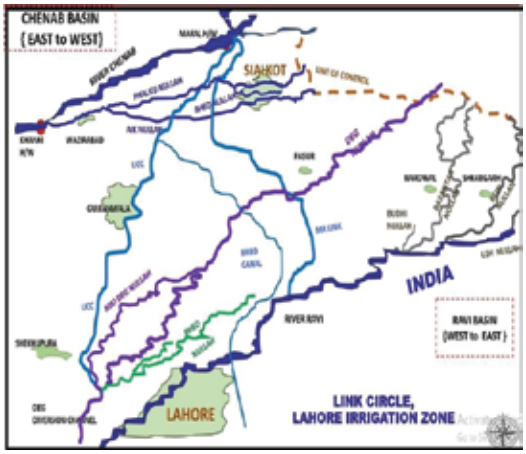


Figure 10 Map of Nullahs of Chenab Basin

Table 1 Major Nullahs of Gujranwala and Rawalpindi

Nullah	Length (km)	Inundation Area	Outfall	Maximum Discharge (in Cusecs)
Nullahs of Gujranwala Division				
Palkhu at Sialkot Cantt	80	Sialkot and Wazirabad	River Chenab D/S Crossing of Gujranwala Gujrat G.T. Road U/S Khanki	4,525 (2020)
Aik at Ura, Sialkot	56	Sialkot and Sambrial	Nullah Palkhu before Wazirabad	44,386 (2014)
Deg at Kingra Bridge, Sialkot	160	Zafarwal, Chawinda, Pasrur, Q.S. Singh, Gujranwala, Muridke, and Ferozewala	UP-Stream of Balloki H/W near Sharqpur Sharif	75,102 (2014)
Bein at Shahargarh, Narowal	48	Shakargarh	River Ravi U/S Jassar Bridge	143,000 (1961)
Basantar at Narowal	51	Narowal	River Ravi Down Streamof discharge Site of Jassar Bridge	43,000 (1996)
Nullahs of Rawalpindi District				
Lai at Rawalpindi	30	Rawalpindi urban areas	River Soan	(2001)

To address these ongoing challenges in 2025, the following strategic measures are emphasized:

- Regular desilting and clearance operations in all major nullahs before the onset of monsoon.
- Strengthening and elevation of embankments, especially in vulnerable rural and semi-urban areas.
- Community-based early warning systems and improved forecasting to ensure timely alerts.
- Strict enforcement of anti-encroachment laws, particularly in urban nullah zones like Lai Nullah.
- Deployment of emergency response units with pre-positioned equipment and rescue boats in high-risk zones.
- Enhanced coordination between the PDMA, district administrations, and the Irrigation Department for real-time monitoring and rapid response.

These actions form a critical part of Punjab's broader disaster resilience strategy for 2025, aimed reducing human and economic losses due to seasonal flooding events.

1.7.1 PALKHU NULLAH

The Nullah Palkhu begins near Saidpur in the Bajwat area of India and crosses into Pakistan from Indian-controlled Kashmir near the village of Vens at the Line of Control (LOC). It flows through several Pakistani cities including Sialkot, Sambrial, and Wazirabad before joining the Chenab River upstream of the Khanki Headworks. The nullah spans a total length of 96.5 kilometers from the LOC to its outfall into the Chenab. It serves dual purposes along its course: irrigation and sewage drainage for the cities of Sialkot and Wazirabad. The upper catchment area of the nullah is hilly, causing floodwaters to enter Pakistan with high velocity and leading to rapid rises in water levels. The maximum discharge recorded at the Sialkot Bridge in 2020 was 4,525 cusecs, surpassing its absorption capacity of 3,000 cusecs. This discrepancy highlights the challenges in managing flood risks and water flow in the region as of 2024.

1.7.2 AIK NULLAH

The Aik Nullah originates in Jammu & Kashmir and traverses through the major city of Sialkot in Pakistan before merging with the larger Nullah Palkhu near Wazirabad, eventually draining into the River Chenab upstream of the Khanki Barrage. Flooding is a recurrent issue in Aik Nullah, significantly impacting the residents of Sialkot almost biennially. The most severe flooding recorded occurred on September 26, 2014, when water levels reached 44,386 cusecs, far exceeding its capacity of 25,000 cusecs at Urra Bridge in Sialkot. This ongoing challenge underscores the need for enhanced flood management and infrastructure improvements in the region as of 2024.

1.7.3 DEG NULLAH

Deg Nullah, a significant tributary of the River Ravi, originates in Jammu & Kashmir near Zafarwal and traverses through the districts of Sialkot, Narowal, Gujranwala, Sheikhupura, and Nankana Sahib in Pakistan. It eventually merges with the River Ravi near Sharaqpur through the Deg diversion channel. The most notable recorded discharge at Kingra Bridge occurred on September 26, 2014, reaching 75,102 cusecs, far surpassing its capacity of 17,000 cusecs.

1.7.4 BEIN NULLAH

Bein Nullah, whose catchment lies approximately 25 kilometers from Shakargarh in District Narowal, extends for 48 kilometers within Pakistan. Historical data recorded a maximum discharge of 143,000 cusecs on July 29, 1961, following heavy rainfall, which sustained for 6 to 8 hours. Effective management at the time prevented any damage to nearby villages or agricultural land. Bein Nullah ultimately drains into the River Ravi upstream of Jassar Cantonment.

1.7.5 BASANTAR NULLAH

Basantar Nullah, originating approximately 35 kilometers from Shakargarh in District Narowal, India, once saw a maximum discharge of 43,000 cusecs on August 24, 1996, with no significant damage reported. It flows into the River Ravi near Narowal City.

1.7.6 LAI NULLAH

The Lai Nullah, also known as Nullah Lai, serves as a significant drainage channel between the twin cities of Islamabad and Rawalpindi. It spans about 30 kilometers, with 17 kilometers within Rawalpindi. Originating from the foothills behind Islamabad, Lai Nullah has a total catchment area of 234.8 square kilometers—161.2 square kilometers in Islamabad and 73.6 square kilometers in Rawalpindi. It features six major tributaries, with three originating from Islamabad merging near the Kattarian Bridge on I.J. Principal Road in Rawalpindi. The remaining tributaries join in Rawalpindi before the nullah discharges into the Soan River, a tributary of the Indus. Known for its rapid rise in floodwaters, Lai Nullah has experienced significant flooding events in 2001, 2002, 2003, 2008, 2012, and 2013, with 2001 being notably severe. In District Mianwali, notable nullahs such as Rakka, Darsola, and Jabba Nullahs are known for causing localized flash flooding and consequent material losses to the local communities.

1.8 HILL TORRENTS

In 2025, the southwestern region of Punjab—bordered by the Suleiman Ranges (Figure 11) and stretching approximately 360 kilometers from Ramak near Taunsa to Kashmore at the Sindh border—remains highly vulnerable to flooding due to hill torrents, locally known as "Rodh Kohie". This region encompasses the Dera Ghazi Khan and Rajanpur districts, where the River Indus serves as the primary drainage outlet. During the monsoon season, intense rainfall in the Suleiman Ranges frequently triggers flash floods, which cascade rapidly into the downstream plains. These torrents, numbering around 200, including 13 major hill torrents, can result in widespread destruction within a short timeframe. The areas most at risk include irrigated agricultural lands, settlements, roads, bridges, and critical infrastructure particularly around the Dera Ghazi Khan Canal and Chashma Right Bank Canal systems.

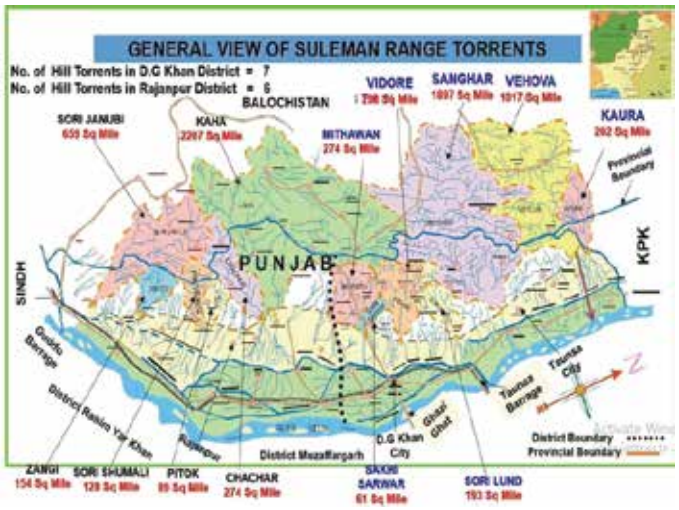


Figure 11 Suleman Range Hill Torrents

Notably, the Piedmont (Pachad) zones, which historically depend on controlled torrent flows for irrigation, often receive insufficient water during flash floods, as the unregulated surges bypass traditional channels. These torrents typically recede quickly after rainfall subsides, concentrating their impact within a few kilometers of the hills. However, their intensity and unpredictability continue to pose challenges for both emergency response and long-term water resource management.

Table 2 Maximum Discharge Recorded (in Cusecs) for Hill Torrent of Rajanpur and DG Khan

S.No	District	Name of Hill Torrent	Design Capacity	Maximum Discharge Recorded (in Cusecs)
1.	Rajanpur	Kaha at Darra	11,850	108,941
2.		Chachar at Darra	85,500	75,900
3.		Patokh at Darra	23,900	14,600
4.		Sori Shumali at Darra	7,713	7150
5.		Zangi at Darra	3,500	27,500
6.		Sori Janobi at Darra	41,600	17,000
7.	DG Khan	Kaura at Darra	6,1184	140,000
8.		Vehova at Darra	87,200	154,362
9.		Sanghar at Darra	139,715	268,149
10.		Sori Lund at Darra	97,000	152,487
11		Vidore at Darra	97,000	174,360
12		Sakhi Sarwar at Darra	30,800	32,643
13		Mithawan at Darra	78,000	61,905

In 2025, with the increasing intensity of weather events likely influenced by climate change, these hill torrents present an evolving threat. As part of PDMA Punjab's Flood Contingency Plan 2025, emphasis is placed on:

- Strengthening early warning systems for upstream rainfall and potential flash flooding.
- Maintaining and upgrading flood protection infrastructure, including spurs, embankments, and diversion channels.
- Documenting and digitizing historical flow data, particularly in Dera Ghazi Khan and Rajanpur, to enhance predictive modeling.
- Engaging local communities through training and revival of indigenous water management techniques for flood diversion and irrigation.
- Integrating GIS and remote sensing tools to map vulnerable zones and monitor real-time flood behavior.

By incorporating both modern technology and traditional knowledge, PDMA Punjab aims to mitigate the impacts of hill torrent-induced flooding in the region and ensure resilient development for the communities of Dera Ghazi Khan and Rajanpur.

Several torrents have recorded peak flows far exceeding their design capacities, underscoring the severity and unpredictability of these events (Table 2). For example, Sanghar Hill Torrent in DG Khan, with a design capacity of 139,715 cusecs, reached a maximum discharge of 268,149 cusecs, while Vidore and Sori Lund torrents recorded discharges of 174,360 and 152,487 cusecs respectively. In Rajanpur, the Kaha Hill Torrent surged to 108,941 cusecs, nearly ten times its design capacity of 11,850 cusecs. These figures not only highlight the extreme hydrological behavior of Rodh Kohie systems but also emphasize the urgent need for enhanced flood mitigation infrastructure, accurate forecasting, and robust emergency preparedness across the vulnerable southwestern districts of Punjab.

1.9 RIVERS AND FLOOD ROUTING MODEL (TIME LAGS)

Flood routing is a method used to predict the timing and characteristics of floodwaters along a river, utilizing upstream flow data to estimate downstream effects (Figure 12). This technique provides crucial insights for managing flood risks, particularly in planning and operating the infrastructure along rivers such as head-works, barrages, and dams. The model in question outlines the major rivers in Punjab, detailing the key infrastructures positioned along these waterways. Additionally, it includes information on the average travel time, measured in hours (T-Time lag), for floodwaters to move between two points. This data is essential for emergency response and water management strategies.

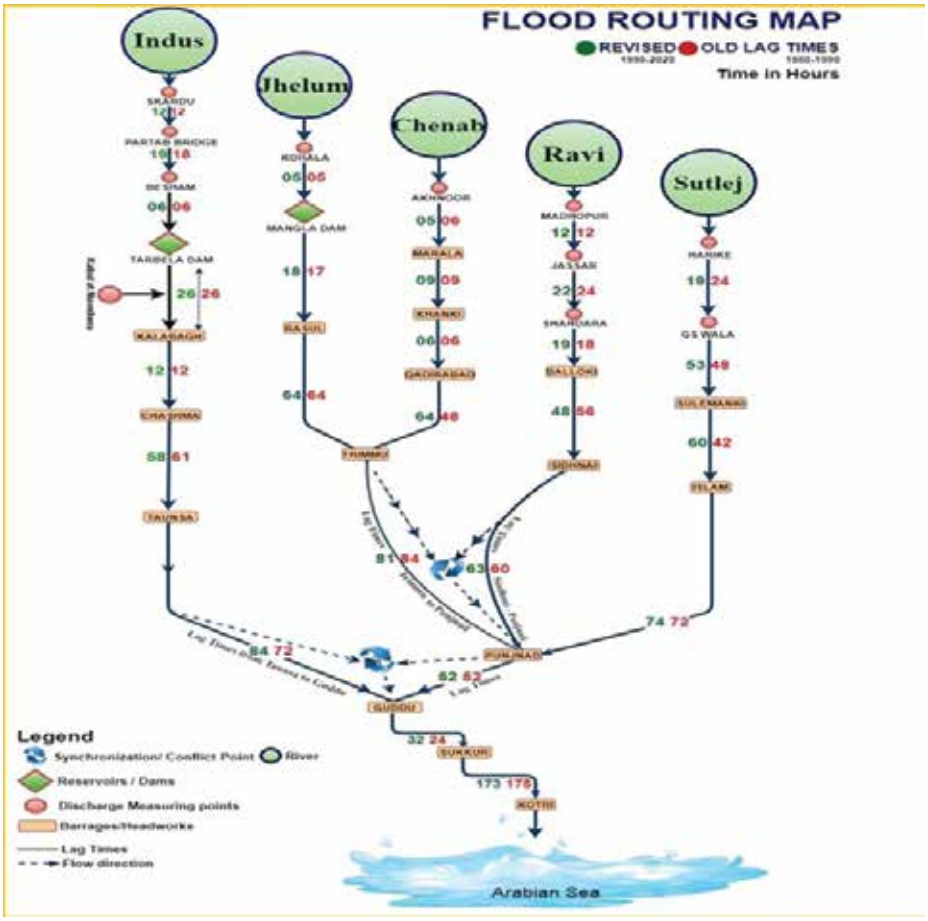


Figure 12 Flood Routing Map for Punjab Rivers

1.10 DISTRICTS PRONE TO FLOODING

Flood hazard maps were meticulously crafted for all districts of Punjab, as depicted in the accompanying figures. These maps delineate flood extents and water depths against inundated areas, categorizing districts into three tiers of vulnerability. Category A designates the most susceptible districts Figure 13, category B identifies districts with a medium level of vulnerability Figure 14, and category C denotes the least vulnerable districts Figure 15 in Punjab. This categorization is based on the frequency of flooding experienced by each district.

FLOOD (Category- A)

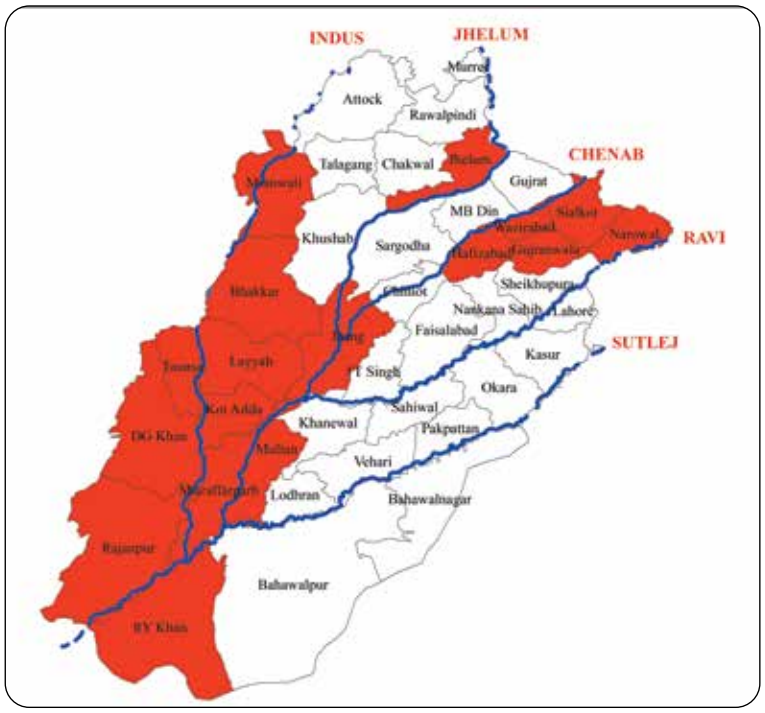


Figure 13 Flood Category A Districts

FLOOD (Category- B)

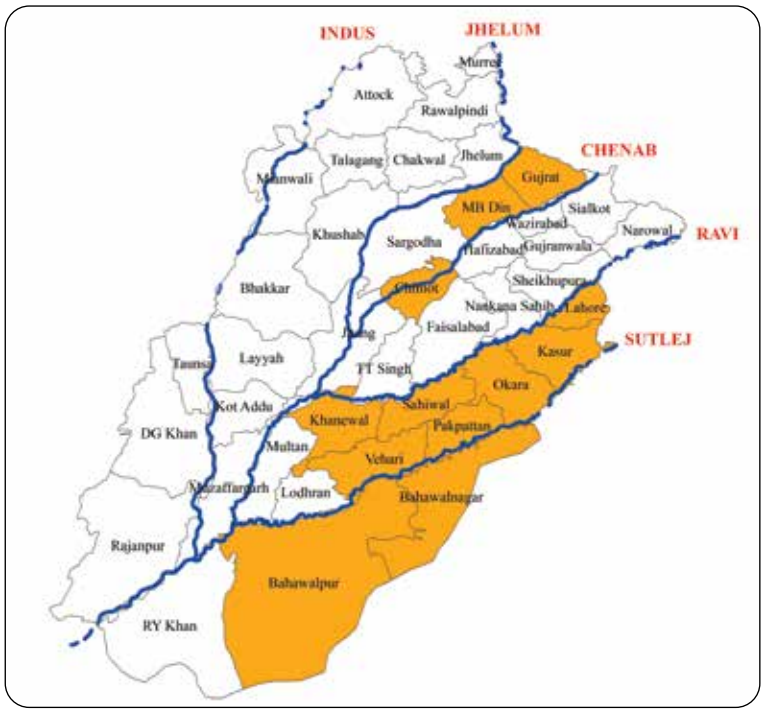


Figure 14 Flood Category B Districts

FLOOD
(Category- C)

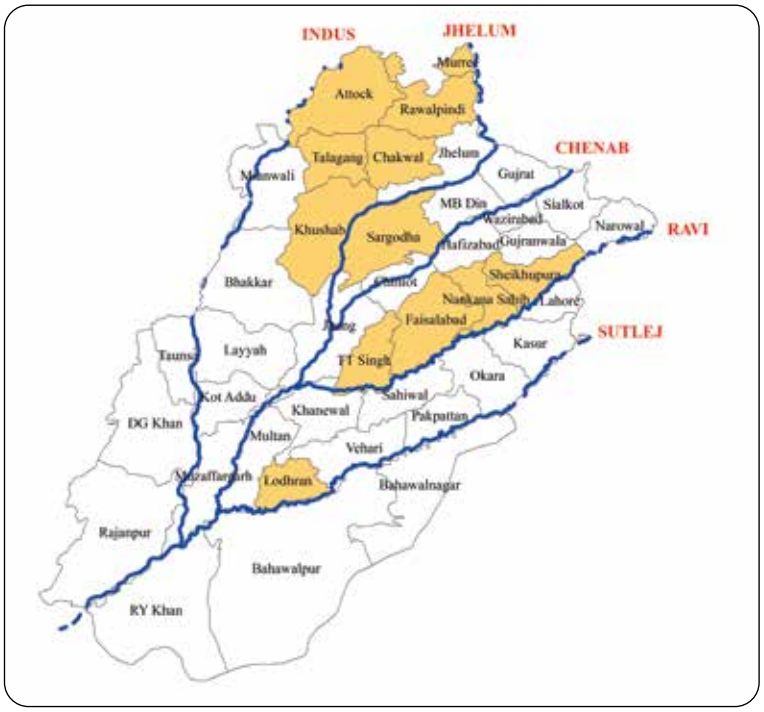


Figure 15 Flood Category C Districts

1.11 DISTRICTS PRONE TO HILL TORRENT

In addition to riverine floods, certain districts in southern Punjab are particularly prone to hill torrents Figure 16, which occur due to sudden and intense rainfall over hilly terrain, resulting in fast-flowing streams that inundate low-lying areas. Dera Ghazi Khan and Rajanpur are the most affected by hill torrents, primarily due to their proximity to the Sulaiman Range. These torrents, locally known as rod-kohis, can cause widespread damage to infrastructure, agriculture, and settlements located along their paths. Figure 8 shows the hill torrent prone areas.

HILL TORRENT
(Prone Area)

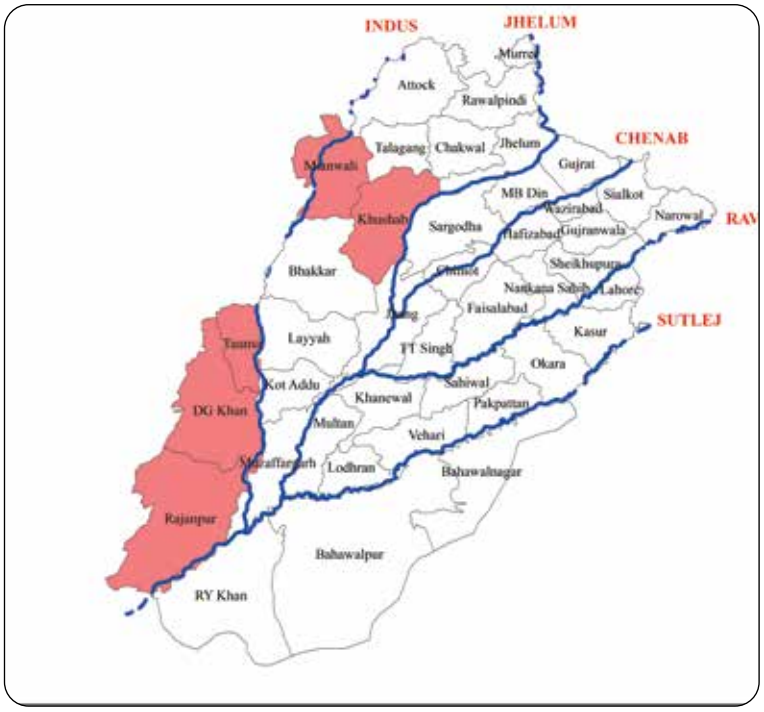


Figure 16 Districts Prone to Hill Torrent

1.12 DISTRICTS PRONE TO FOREST FIRES

Forest fires, though less frequent compared to other hazards, pose a serious threat to the ecological balance and biodiversity in certain forested regions of Punjab. Murree, Kotli Sattian, Chakwal, and parts of Rawalpindi district are particularly vulnerable due to dense forest cover, dry weather, and human activities such as tourism and agriculture Figure 17. The risk intensifies during the hot summer months when dry vegetation and high temperatures create ideal conditions for the ignition and spread of fires.

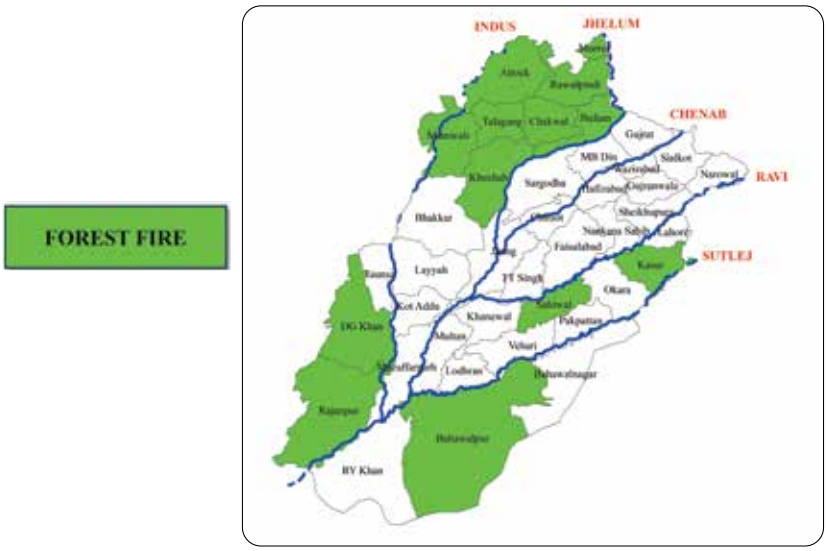


Figure 17 Districts Prone to Forest Fires

1.13 DISTRICTS PRONE TO DROUGHT

Droughts affect areas with low rainfall and high dependence on rain-fed agriculture. The western and southern districts of Punjab are especially vulnerable to prolonged dry spells Figure 18. Districts such as Cholistan (Bahawalpur), Rajanpur, Dera Ghazi Khan, and parts of Mianwali and Bhakkar frequently experience drought-like conditions. These areas suffer from water scarcity, leading to reduced agricultural productivity, livelihood challenges, and stress on water resources.

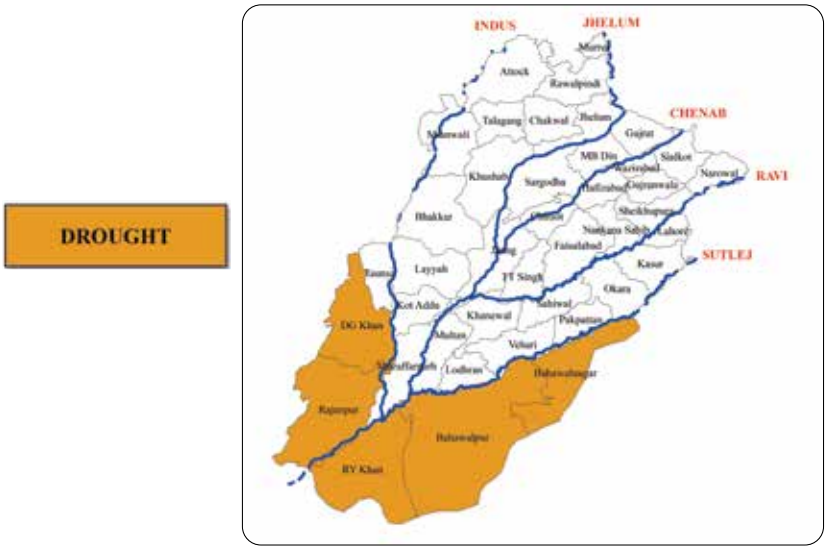


Figure 18 Districts Prone to Drought

1.14 DISTRICTS PRONE TO LOCUST

Locust infestations pose a significant threat to agriculture in Punjab, particularly in the arid and semi-arid regions of the province. The southern and southwestern districts are especially vulnerable due to their proximity to the Cholistan Desert and bordering areas of Sindh and Balochistan, which often serve as entry points for desert locust swarms migrating from neighboring countries. Districts such as Bahawalpur, Bahawalnagar, Rahim Yar Khan, Dera Ghazi Khan, Rajanpur, Muzaffargarh, and Layyah have historically been affected by these invasions Figure 19. The Cholistan region, in particular, provides favorable breeding grounds for locusts, especially following periods of heavy rainfall. These infestations can severely impact crops such as wheat, cotton, and sugarcane, leading to economic losses for farming communities and creating food security challenges. Vigilant surveillance, early warning systems, and prompt control measures are essential to mitigate the risks posed by locust swarms in these districts.

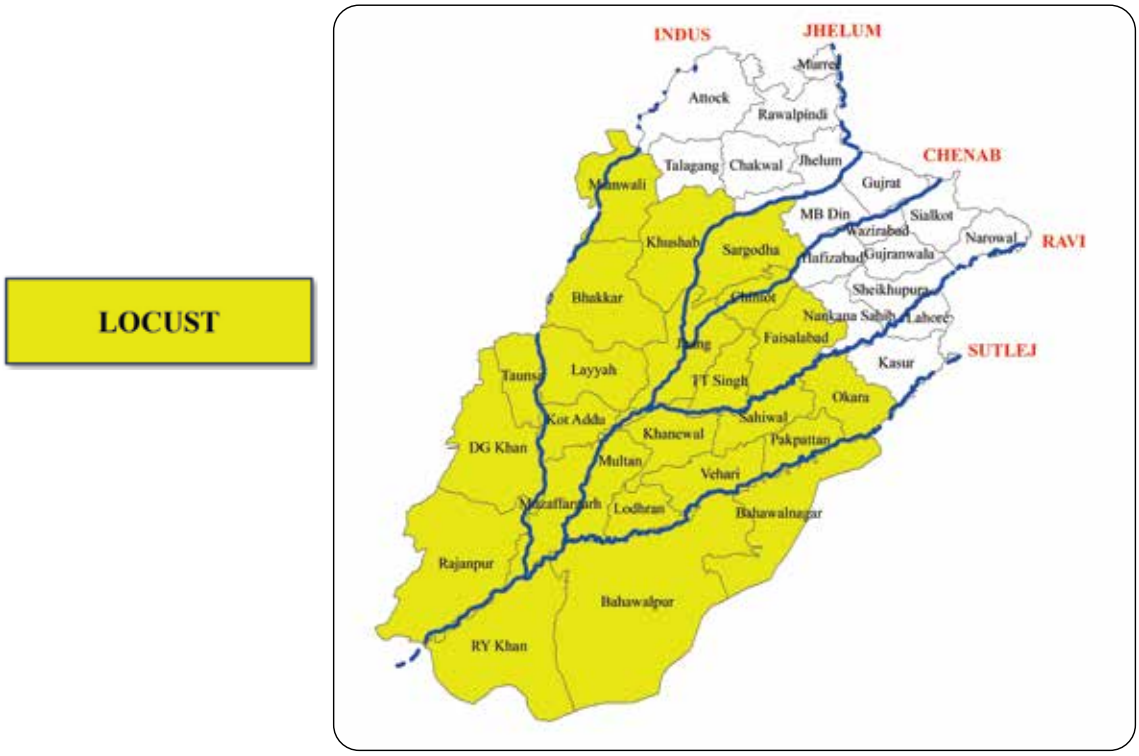


Figure 19 Districts Prone to Locust

1.15 DISTRICTS PRONE TO URBAN FLOODING

Urban flooding is an increasingly significant issue in densely populated and poorly drained urban centers. Districts like Lahore, Rawalpindi, Faisalabad, Multan, and Gujranwala are highly susceptible due to rapid urbanization, inadequate drainage systems, and the loss of natural waterways. Intense rainfall events, combined with impermeable surfaces and encroachments on natural drains, often result in waterlogging, traffic disruptions, and damage to infrastructure in these urban districts Figure 20.

URBAN FLOODING

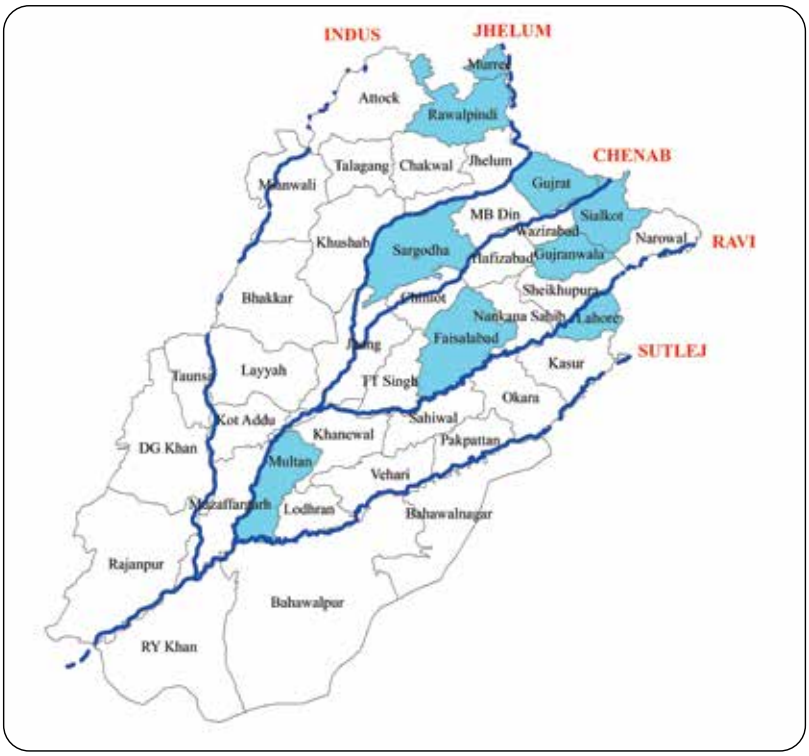


Figure 20 Districts Prone to Urban Flooding

1.16 INSIGHTS FROM HISTORICAL FLOOD CATASTROPHES

Punjab has experienced recurrent flood disasters, resulting in profound human and material losses across decades. Notable flood events, including those in 2010, 2011, 2014, 2015, and most recently in 2022, underscored the province's vulnerability to extreme weather events. These floods have displaced millions, destroyed infrastructure, and disrupted livelihoods—exposing systemic gaps in preparedness and resilience.

The increasing frequency and intensity of these disasters is closely linked to climate change, rapid urban expansion in flood-prone zones, and the degradation of natural drainage systems. By 2025, the need for a comprehensive, climate-resilient disaster management approach is more critical than ever.

The PDMA has made significant strides in monitoring, documenting, and analyzing flood impacts including loss of life, property damage, and displacement statistics.

CHAPTER 2
LESSONS LEARNT SITUATIONAL ANALYSIS
FLOOD 2024

2.1 MONSOON SEASON 2024 OVERVIEW AND IMPACT ANALYSIS – PUNJAB, PAKISTAN

Throughout the 2024 monsoon season, PDMA Punjab had actively engaged in monitoring flood situation, issuing timely alerts to the public and relevant authorities and provide compensation to the effected population. PDMA ensured that disaster response teams and relief materials were pre-positioned in vulnerable districts before the onset of heavy rains Table 3. They had conducted multiple training sessions and simulation exercises with District Disaster Management Authorities (DDMAs), civil defense, and other emergency responders to improve their readiness and coordination.

Furthermore, PDMA had collaborated closely with humanitarian organizations, local government bodies, and community leaders to facilitate evacuation plans, establish emergency shelters, and manage post-flood recovery efforts. Their concerted efforts had mitigated the adverse effects of flooding, saved lives, and minimized economic losses across Punjab.

Table 3 Rainfall Observed in 2024

Region	Normal Rainfall (mm	Monsoon 2024(%)	
Pakistan	188	+30	Above Normal
Gilgit-Baltistan (GB)	60	-5	Near Normal
Khyber Pakhtunkhwa (KP)	269	+18	Above Normal
Upper Punjab and Azad Kashmir	517	+25	Above Normal
Lower Punjab	118	+36	Above Normal
Sindh	116	+55	Above normal
Baluchistan	52	+39	Above normal

2.2 KEY IMPACTS OF MONSOON 2024

2.2.1 RIVERINE FLOODING

The riverine flooding during the 2024 monsoon season posed a significant challenge to Punjab, particularly along the Indus River and its tributaries. The Indus River, receiving combined flows from the Kabul and Indus rivers, recorded its highest water discharge sequentially at Chashma, Kalabagh, and Taunsa Figure 21 . These elevated water levels directly affected five districts: Mianwali, Kot Addu, Rajanpur, Dera Ghazi Khan (DG Khan), and Rahim Yar Khan.

The intense river flows resulted in the damage of the flood bund at Kot Addu (Figure 3.4). PDMA promptly coordinated repair operations and mobilized resources to prevent further deterioration. The heavy riverine flooding caused inundation across multiple villages (mauzas) located within the floodplain, impacting thousands of residents. PDMA and District Disaster Management Authorities (DDMAs) swiftly responded with rescue and evacuation operations, setting up relief camps to assist affected communities.

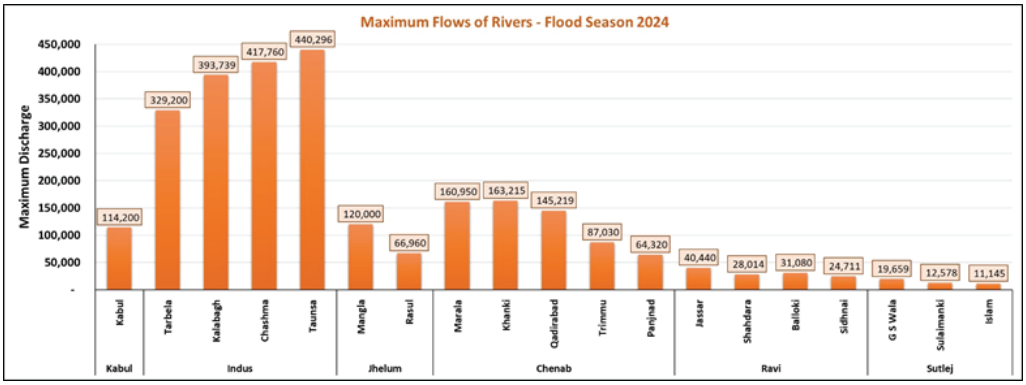


Figure 21 Maximum Flow of Rivers during Monsoon 2024

2.2.2 URBAN FLOODING

Urban flooding emerged as another critical concern, especially in districts including Lahore, Rawalpindi, Sialkot, Gujrat, Gujranwala, Faisalabad, and Multan. The unprecedented rainfall during the 2024 monsoon, such as Lahore's record 944 mm almost double the usual seasonal average, overwhelmed drainage infrastructure, causing severe waterlogging and disruptions.

Key nullahs (urban watercourses) such as Nullah Aik and Nullah Deg experienced maximum flows, significantly contributing to urban inundation. Cities like Lahore recorded extreme single-day rainfall, with August 1st seeing 337 mm, while Sialkot received 586 mm of rainfall, exacerbating flooding through overflowing nullahs.

PDMA's urban flood response was marked by proactive coordination with WASA and local governments. The agency facilitated desilting of drains and deployed dewatering equipment such as sucker machines to rapidly remove standing water. These efforts effectively minimized the impact of flooding, enabling quicker restoration of normalcy. Notably, despite the widespread flooding, no major casualties resulted directly from urban floodwaters, underscoring the success of pre-monsoon preparations and response strategies.

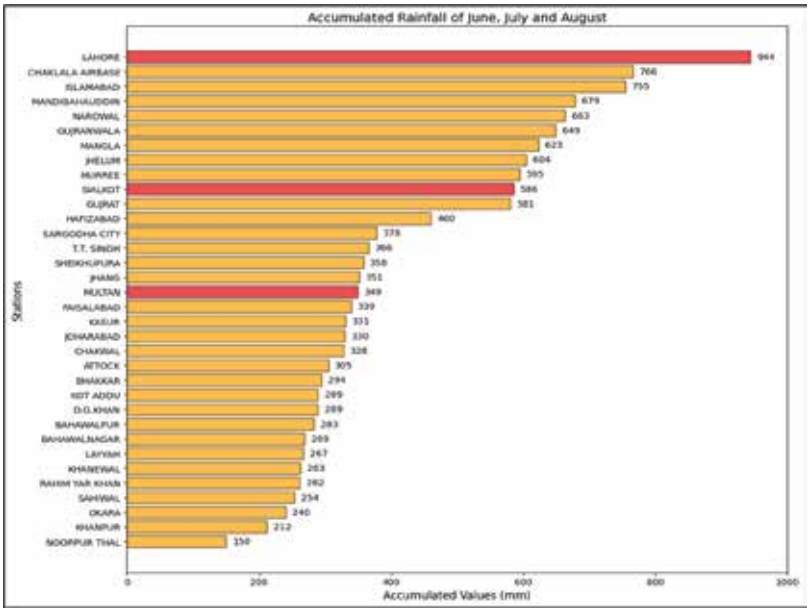


Figure 22 Accumulated Rainfall for the Month of June, July, and August, 2024

2.3 RESPONSE AND RELIEF EFFORTS

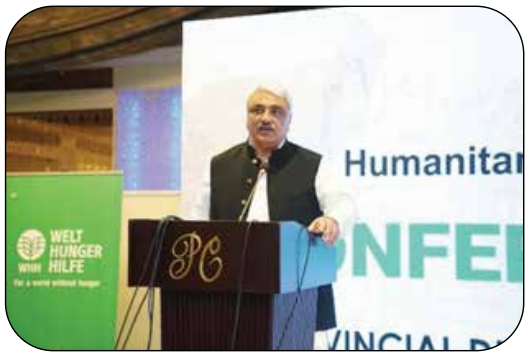
PDMA in coordination with DDMAs led a comprehensive preparedness and response campaign before the monsoon season. Meeting with the top tier ownership, coordination with humanitarian partners, early warning systems were activated, mock drills were conducted, and strategic stockpiles of emergency supplies were distributed. Relief camps were identified in advance, and special desilting campaigns were launched in flood-prone areas to clear drainage channels and nullahs, and provided compensation to the vulnerable population.

During the peak flood period, PDMA ensured swift deployment of boats, tents, food items, and medical kits to the affected districts. Collaboration with Rescue 1122, the Pakistan Army, WASAs, and humanitarian organizations such as UNICEF and WHH played a key role in minimizing casualties and loss of property. Awareness campaigns were run through media and community channels to educate the public on emergency procedures, while emergency operations centers coordinated rescue and relief efforts around the clock.

2.3.1 TOP TIER OWNERSHIP

Figure 23 CM Punjab Visit to PDMA 2024, Monsoon Preparedness

2.3.2 COLLABORATION WITH HUMANITARIAN PARTNERS



Minister Disaster Management Punjab giving Opening Remark

Senior Member Board of Revenue, Punjab giving Welcome Remark

Director General PDMA giving presentation and remarks on PDMA's Working and Collaboration with all stakeholders

US Consulate General Kristen K. Hawkins highlighting importance of collaboration of all departments to mitigate disaster related risks.

2.3.3 EXCHANGE OF FLOOD PREPAREDNESS KNOWLEDGE WITH NIGERIAN DELEGATION

2.3.4 COMPENSATION PROVIDED TO THE FLOOD AFFECTEES

Khushab

Sheikhupura

Rahim Yar Khan

Multan

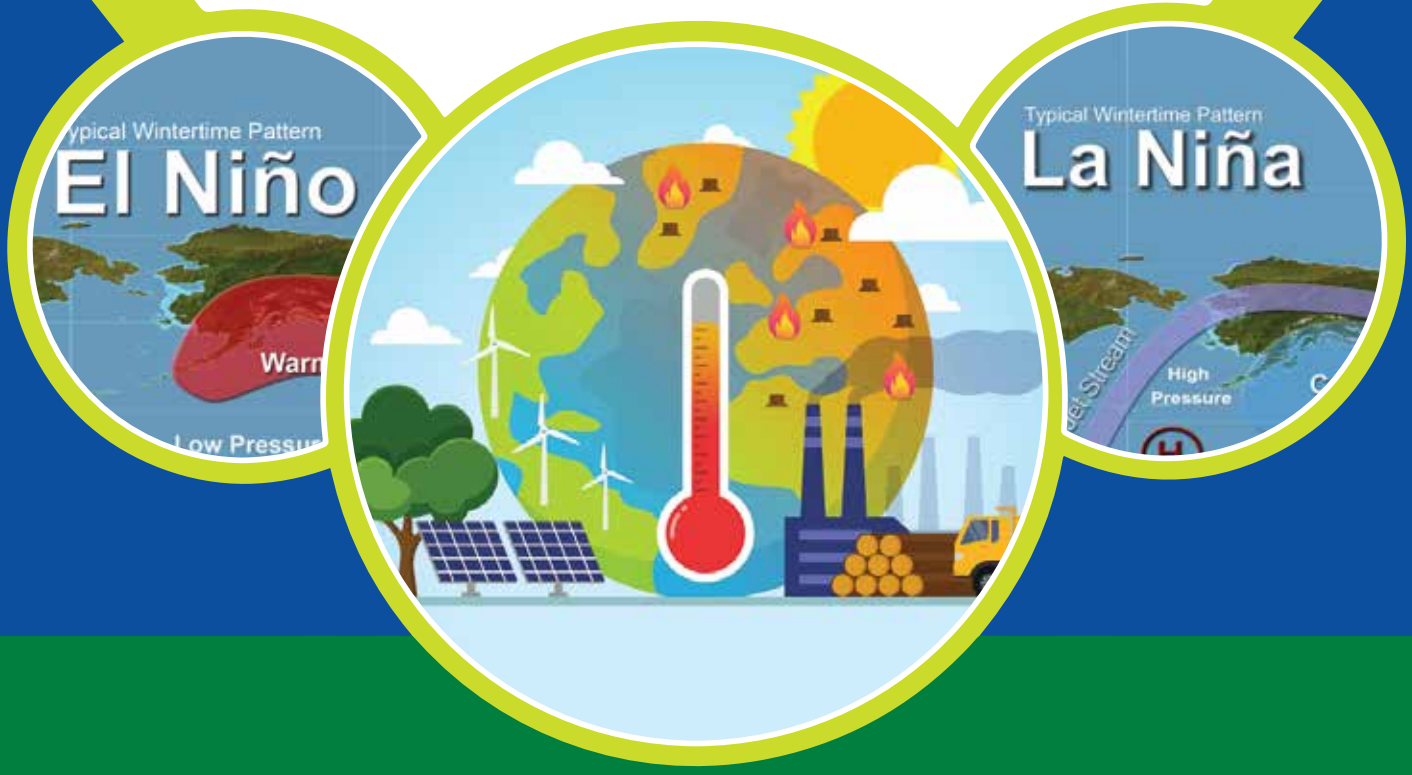
2.3.5 LESSONS LEARNED AND RECOMMENDATIONS

The 2024 monsoon season underscore the necessity for strengthening flood forecasting and early warning dissemination at the community level. Enhancing inter-agency communication, community engagement, and capacity building remain vital to effective disaster risk reduction.

The Multi-Hazard Vulnerability and Risk Assessment (MHVRA) had covered only 20 districts, which limited the scope of comprehensive risk profiling. To improve disaster preparedness and response, it was recognized that the MHVRA needed to be updated and expanded to include the entire province of Punjab, ensuring all vulnerable districts received accurate risk assessments and targeted interventions.

PDMA's experience during this season reinforced the importance of integrated, multi-sectoral approaches that combine hydrological monitoring, GIS-based flood modeling, and preparedness. These measures collectively contributed to a more resilient Punjab, better equipped to face the challenges posed by climate change and increasingly volatile monsoon patterns.

CHAPTER 3
HYDRO-CLIMATIC RISK
OUTLOOK 2025



3.1 INTRODUCTION

The Hydro-Climatic Risk Outlook for 2025 provides a comprehensive analysis of projected weather conditions, key climatic drivers, and their anticipated socio-economic implications across Pakistan. Given the growing prevalence of extreme weather events such as floods, droughts, and heatwaves, understanding atmospheric phenomena like ENSO (El Niño-Southern Oscillation), the Indian Ocean Dipole (IOD), and monsoon behavior is essential for effective disaster risk management, agricultural planning, and water governance. This analysis integrates climate model forecasts, historical monsoon trends, and insights from the Pakistan Meteorological Department (PMD) to inform decision-making for the upcoming monsoon season.

3.2 ENSO FORECASTING

The El Niño-Southern Oscillation (ENSO) is a natural climate phenomenon that significantly influences global and regional weather patterns, including the South Asian monsoon. It has two main phases: El Niño and La Niña (Figure 24). El Niño is characterized by the warming of surface waters in the central and eastern Pacific Ocean, which often leads to suppressed monsoon activity and below-average rainfall in Pakistan and the wider region. La Niña, by contrast, is marked by cooler-than-average Pacific waters and generally results in enhanced monsoon rainfall over South Asia, including above-normal precipitation in parts of Punjab, Pakistan.

During a neutral ENSO phase, neither El Niño nor La Niña dominates, and local weather patterns are more likely to follow seasonal norms, although other factors such as the Indian Ocean Dipole (IOD) can still impact rainfall variability.

In 2025, the ENSO is expected to remain in a neutral phase, with a possible transition toward weak La Niña conditions by late monsoon, potentially increasing the likelihood of stronger rainfall events during the latter part of the season.

This implies that while the overarching ENSO dynamics may be influencing localized weather patterns could still lead to variability in Monsoon rainfall 2025 in south Asian region. Historical data indicates that ENSO-neutral years can still produce fluctuations in Monsoon intensity, with instances of both heavy rainfall and dry spells, depending on the interplay of secondary climatic drivers.

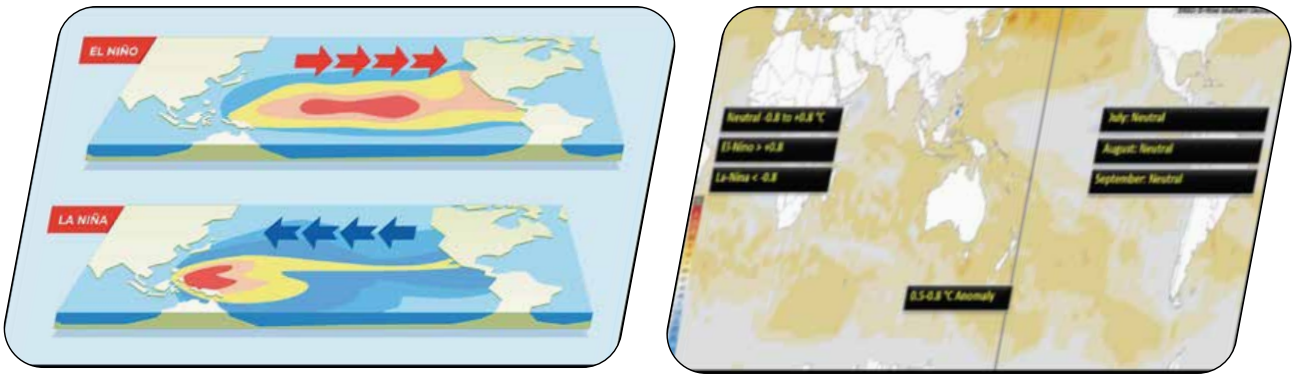


Figure 24 Decoding El Niño and La Niña: Drivers of Hydro-Climatic Variability

3.3 MONSOON CLIMATOLOGY

Pakistan's monsoon climatology reveals well-established seasonal patterns based on synoptic and historical data. Monsoon inflows are typically categorized into three schematic types by PMD Figure 25:

- **Category I:** Moisture influx from the Arabian Sea through Balochistan.
- **Category II:** Monsoon lows entering inland from southeast Pakistan.
- **Category III:** Heavy rainfall due to the convergence of multiple systems.

Punjab is particularly influenced by monsoon currents originating from the Bay of Bengal, which enter via the northeast and often lead to hill torrents and urban flooding. The evolving nature of monsoon lows from long-duration moderate spells to short but intense cloudbursts has increased the frequency of disruptive events, especially in densely populated urban centers.

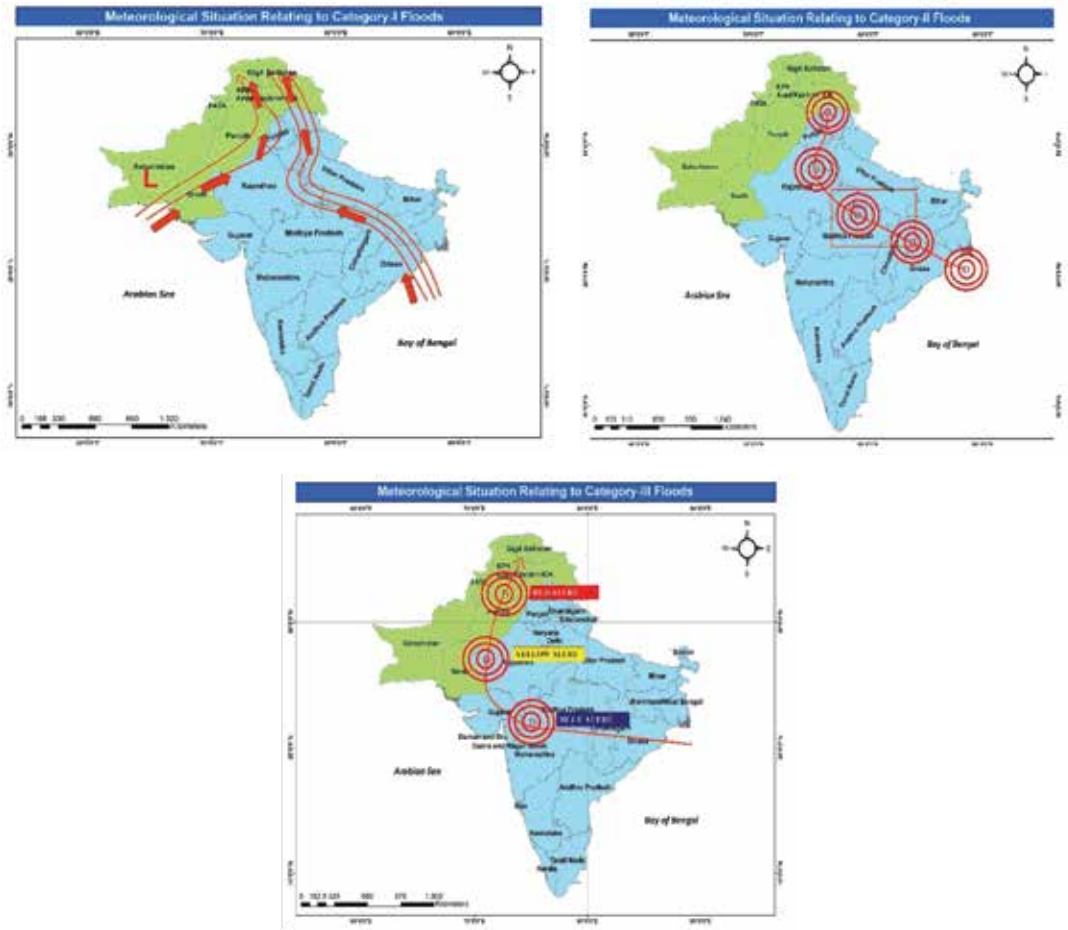


Figure 25 Categories and Intensity of Floods with respect to different scenerios

3.4 MONSOON SYSTEMS SUMMARY (2021–2024)

This retrospective assessment highlights inter-annual variability in the monsoon systems (Figure 26)
2021–2024 observed shifts in monsoon low trajectories and an increase in high-intensity rainfall events
A trend of intensification and short-duration heavy spells is becoming more common
The data suggests an increasing likelihood of urban flooding due to sudden, high-volume rainfall events

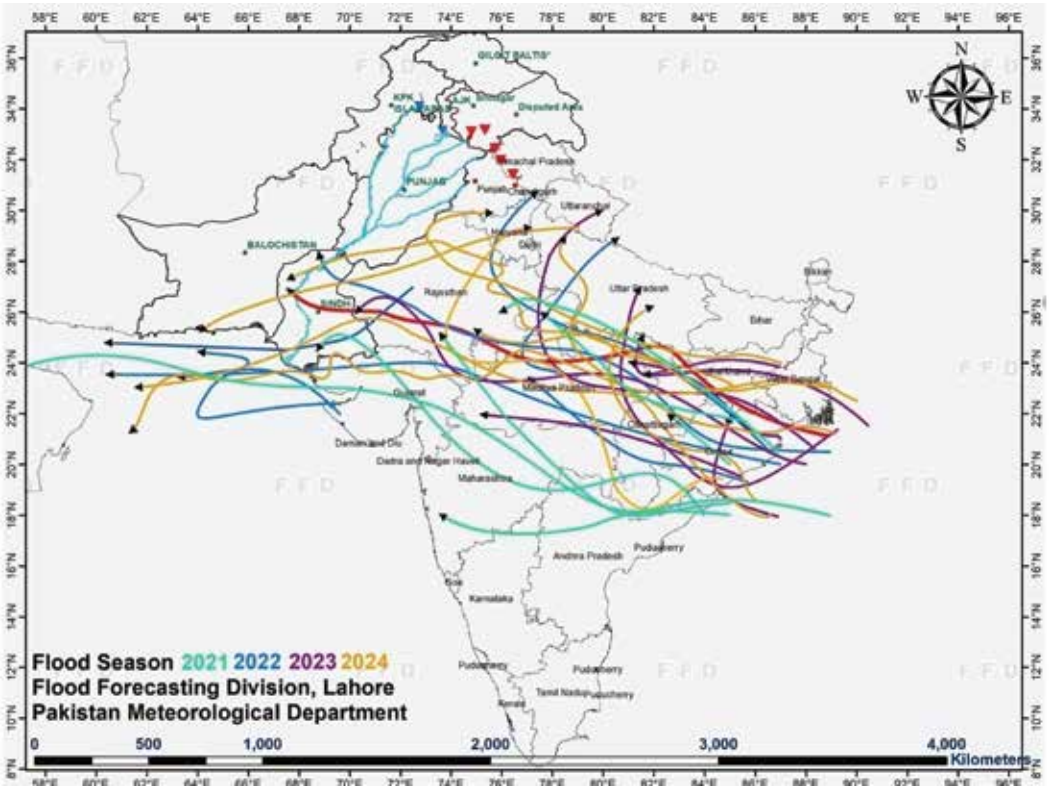


Figure 26 2021–2024 Observed Shifts in Monsoon Low Trajectories

3.5 GLOBAL MODEL FORECAST

Global climate models, particularly those developed by renowned institutions such as the UK Met Office (UKMO) and the WMO-South Asian Seasonal Climate Outlook Forum (SASCOF) Multi-Model Ensemble (MME), are instrumental in providing probabilistic forecasts that guide regional climate assessments. These models synthesize a wide array of oceanic and atmospheric variables to produce seasonal outlooks, offering critical insights into large-scale phenomena like ENSO (El Niño–Southern Oscillation) and the Indian Ocean Dipole (IOD), both of which significantly influence South Asia's monsoonal behavior. For the July–August–September (JAS) 2025 period, these models collectively indicate a neutral ENSO state in the early part of the season, with a potential transition toward weak La Niña conditions later. Additionally, a shift toward a negative IOD phase is expected, which may reinforce monsoonal rainfall over certain regions.

With respect to precipitation, global model projections suggest a near-normal to above-normal rainfall pattern over some regions of Pakistan during the JAS period (Figure 27). However, the season is expected to exhibit a mixed rainfall regime, marked by episodes of intense downpours interspersed with prolonged dry spells. This irregular distribution may heighten the risk of localized flooding as well as short-term water stress in areas with rainfall deficits. Temperature trends are equally significant, with strong confidence in above-average mean temperatures across Pakistan. Elevated temperatures, particularly in the northern highlands and southern plains, could accelerate snowmelt, increase evapotranspiration rates, and exacerbate the risk of heatwaves posing challenges for both agriculture and public health systems.

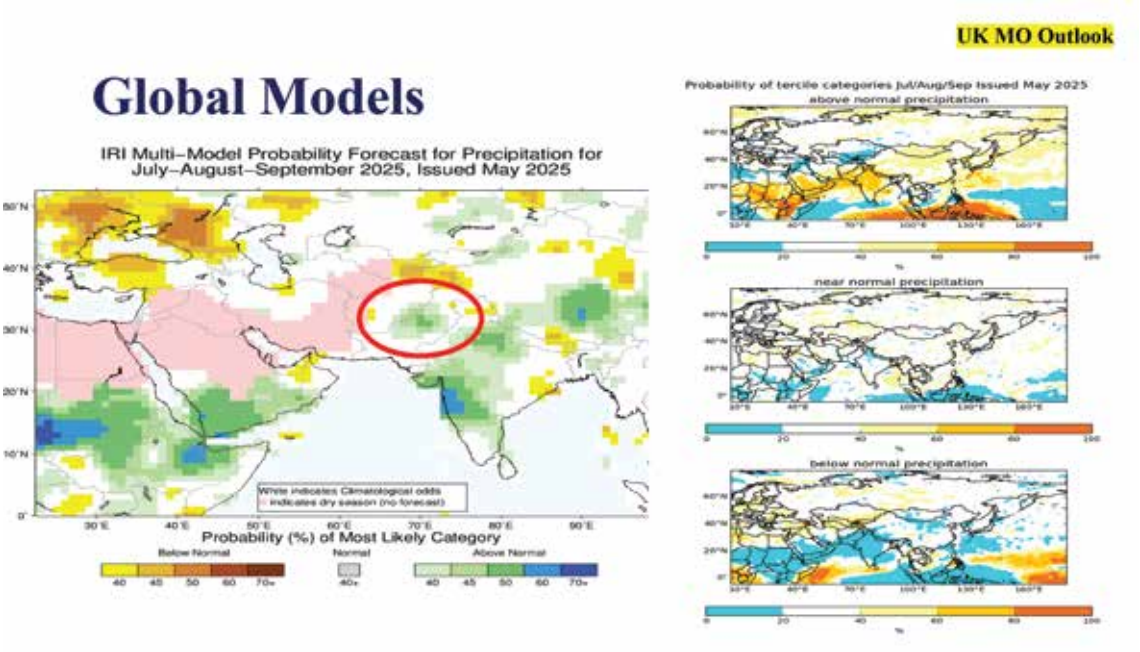


Figure 27 Global Model Outlook UK Met Office (UKMO)

The South Asia Climate Outlook Forum (SASCOF), supported by the World Meteorological Organization (WMO), projects above-normal rainfall over most parts of South Asia during the 2025 southwest monsoon season (June to September) (Figure 28) . This rainfall is vital as the monsoon accounts for 75-90% of annual precipitation in much of the region, replenishing essential water resources for agriculture, drinking water, and hydropower. Alongside increased rainfall, above-average temperatures are expected across much of South Asia, which may affect water availability and public health. However, some northern, eastern, and northeastern regions are forecasted to receive below-normal rainfall, highlighting the variability in monsoon impacts across the region.

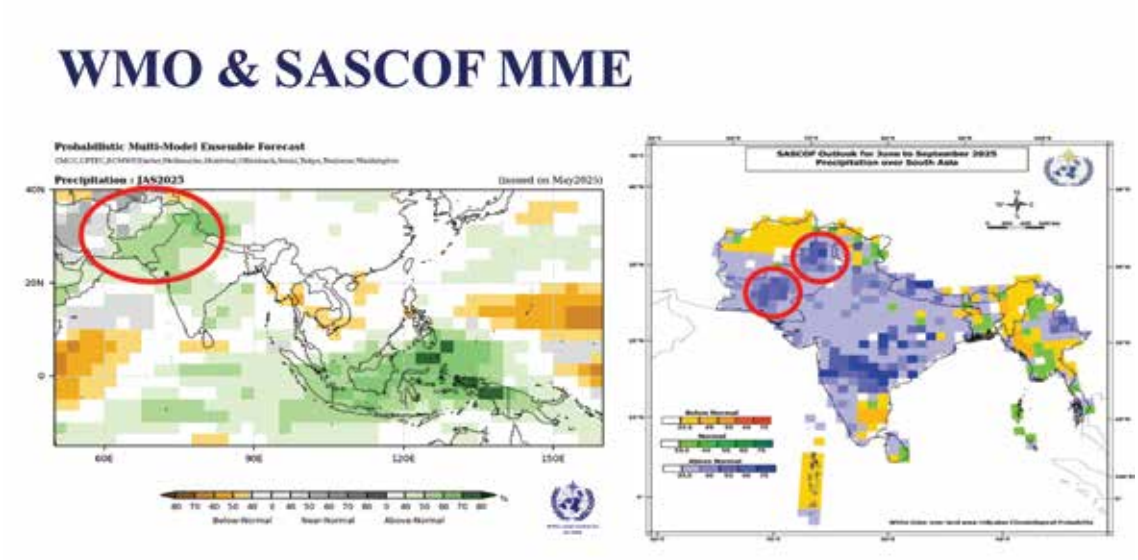


Figure 28 Global Model Outlook WMO-SASCOF MME (Multi-Model Ensemble)

SASCOF's outlook is developed collaboratively by nine National Meteorological and Hydrological Services (NMHSs) across South Asia, integrating key global climate influences such as ENSO currently in a neutral phase and the Indian Ocean Dipole. Additionally, recent low winter and spring snow cover in the Northern Hemisphere is considered, as it can influence monsoon strength. These forecasts provide essential guidance for climate-sensitive sectors, enabling better planning for agriculture, disaster risk management, and renewable energy production. International initiatives like Early Warnings for All further enhance regional preparedness to mitigate the risks associated with monsoon variability.

The region will face above-normal temperatures throughout this period (Figure 29), contributing to increased climate risks such as heatwaves, droughts, and intensified monsoon rainfall events. These temperature rises will affect water availability, agriculture, and public health, reinforcing the need for enhanced climate adaptation and risk management.

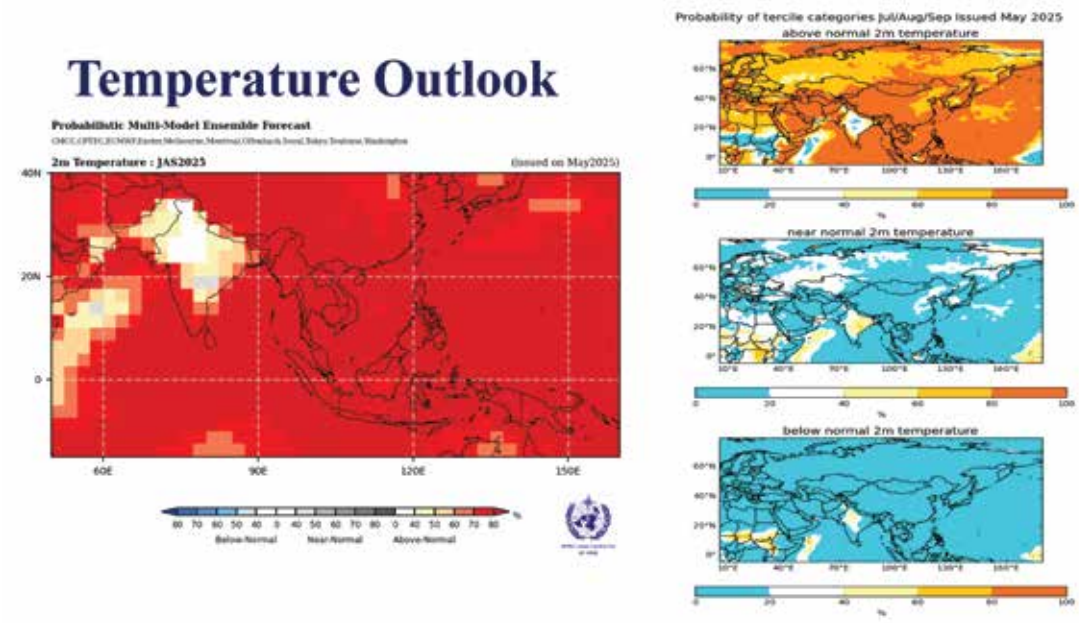


Figure 29 Temperature Outlook Model for Jul, Aug, Sep 2025

3.6 EUROPEAN COMMISSION OUTLOOK

The 2025 Monsoon Forecast issued by the Emergency Response Coordination Centre (ERCC) and the European Commission highlights the potential for above-normal rainfall across parts of South Asia, with particular concern for Pakistan. Cities such as Islamabad, and Faisalabad are expected to receive significant precipitation, with projected totals of approximately 893 mm, and 326 mm respectively during the June to September period (Figure 30). These projections align with broader global model forecasts, emphasizing the likelihood of intensified monsoon activity in certain regions.

Despite these localized high rainfall estimates, much of Pakistan is expected to experience moderate precipitation ranging between 100 to 200 mm. This uneven spatial distribution underscores the importance of region-specific planning and preparedness efforts. Areas facing potential hydrological surplus must be equipped to manage flood risks, while regions with comparatively lower rainfall require strategies to mitigate water scarcity. Such nuanced understanding is critical for effective disaster management, agricultural planning, and water resource allocation in the 2025 monsoon season.

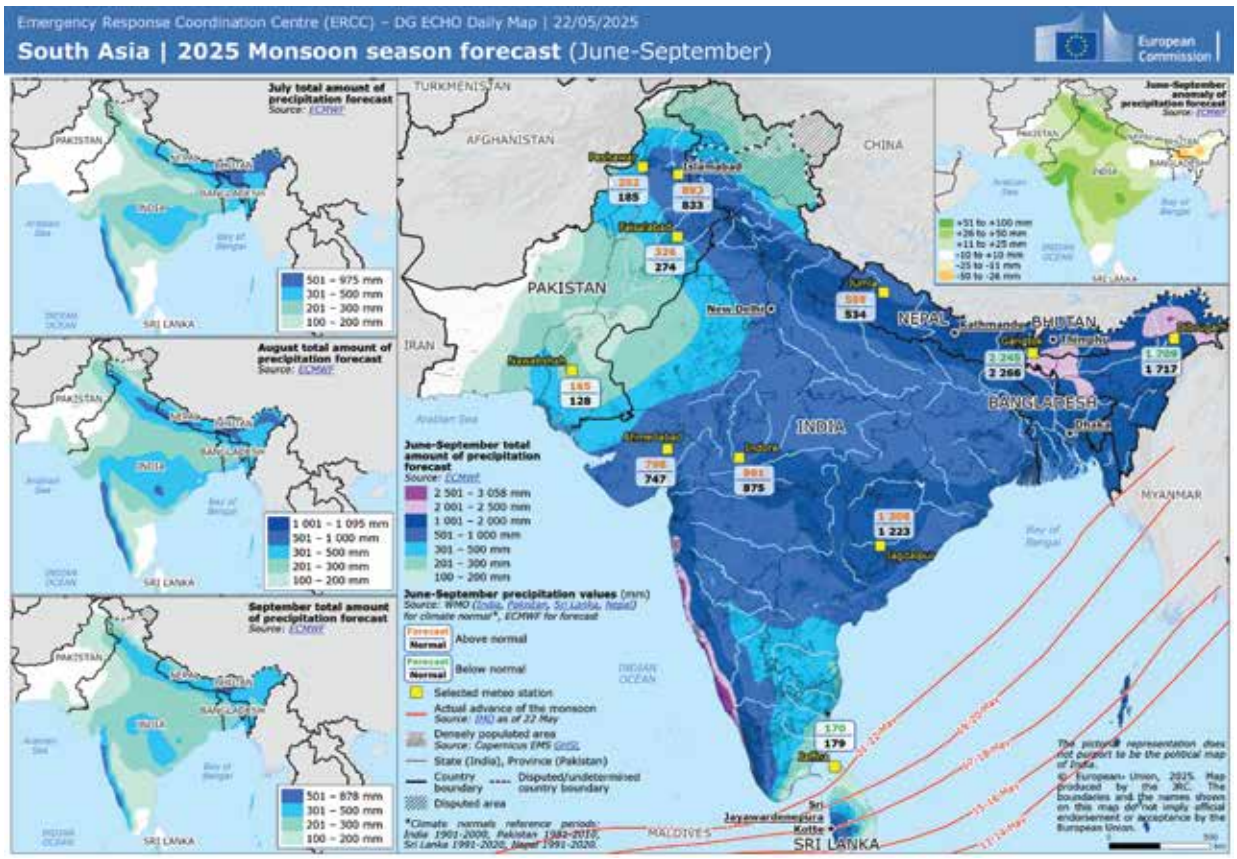


Figure 30 South Asian Climate Outlook Forum (SASCOF-31) Monsoon Season Projection from June to September (JJAS)

3.7 PMD OUTLOOK FOR JULY–AUGUST–SEPTEMBER (JAS) 2025

The seasonal forecast forms the backbone of preparedness planning for 2025 (Figure 31). The outlook indicates that several districts in Punjab especially Lahore, Narowal, Sialkot, Sheikhupura, Kasur and Gujranwala are expected to receive above-normal rainfall. The forecast categorizes precipitation intensity rankings across districts (table 4)

Table 4 Districts Expected to Receive Above-Normal Rainfall

Ranking	Districts
1	Lahore, Narowal
2	Sialkot, Gujranwala, Sheikhupura, Kasur
3	Gujrat, Wazirabad, Hafizabad, Okara, Bahawalnagar, Pakpattan

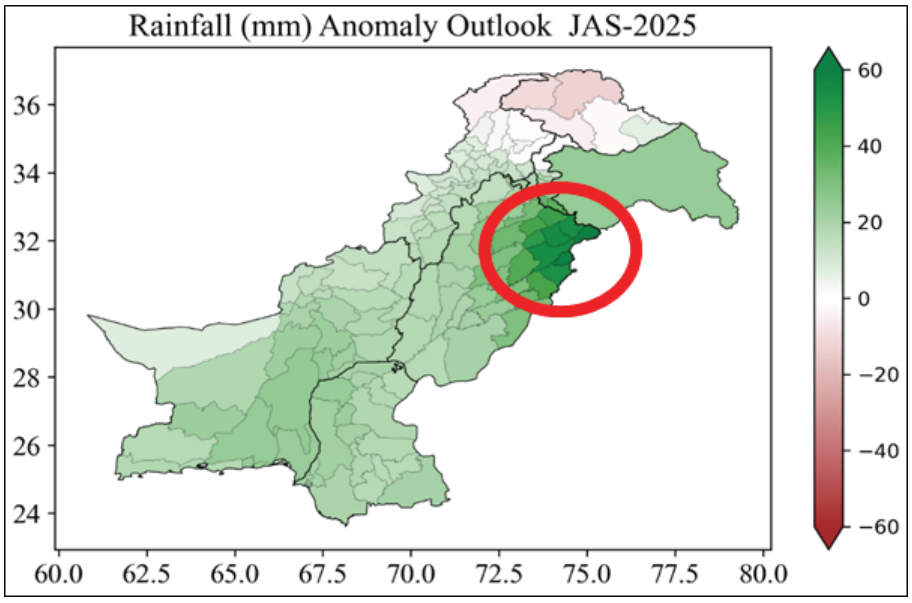


Figure 31: Rainfall Outlook (Source PMD)

3.7.1 TEMPERATURE OUTLOOK

Temperature projections for JAS 2025 reveal a strong warming trend across Punjab. The southern coastal belt and northern highlands are expected to experience significant temperature anomalies (Figure 32). The combination of elevated temperatures and episodic rainfall could lead to an uptick in heatwave incidents—particularly in southern Punjab and interior Sindh and accelerate glacial melt in GB and KP, elevating the risk of glacial lake outburst floods (GLOFs) and river surges.

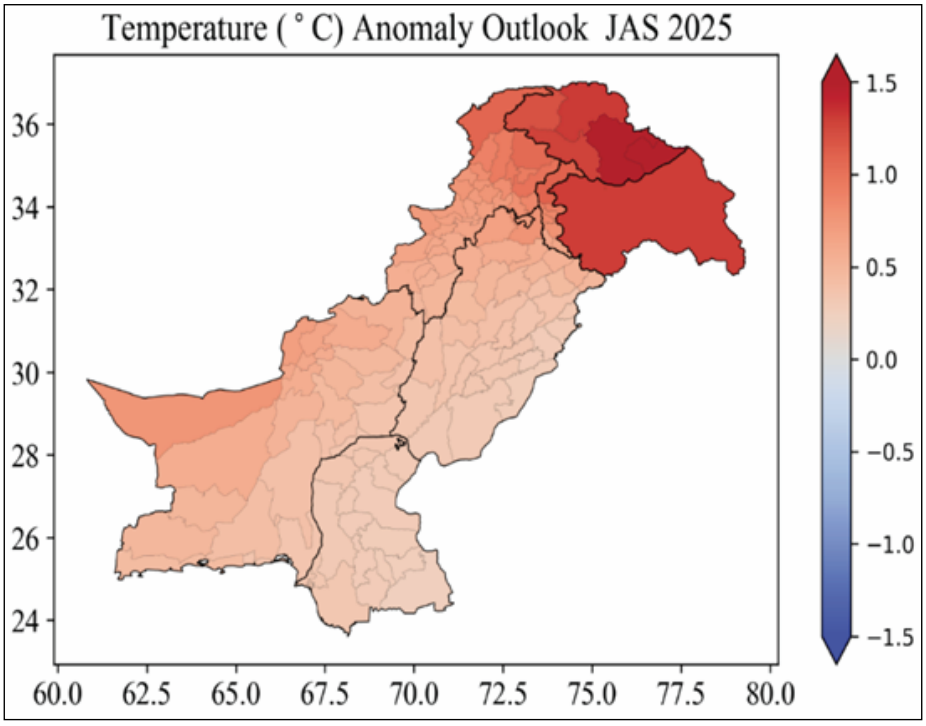


Figure 32: Temperature Anomaly (Source PMD)

3.8 HYDROLOGICAL SITUATION & RESERVOIR CONDITIONS

Pakistan's water storage and flood control infrastructure will play a crucial role in managing the anticipated hydro-climatic conditions. The Mangla and Tarbela dams, which form the backbone of the country's water storage system, are expected to receive healthy inflows during the monsoon season. However, the timing and intensity of these inflows remain uncertain, requiring flexible operation strategies.

The Chenab River system, particularly around the Marala Headworks, warrants close monitoring due to its sensitivity to upstream rainfall patterns in Indian-administered Kashmir. Historical events demonstrate how unexpected rainfall across the border can lead to sudden increases in river flows, potentially overwhelming diversion and storage capacities. Effective coordination between meteorological services, water authorities, and disaster management agencies will be essential for timely responses to developing situations.

3.9 PDMA PUNJAB'S ROLE IN FORECAST INTEGRATION AND CLIMATE RISK PREPAREDNESS

PDMA Punjab plays a important role in interpreting weather forecasts and implementing precautionary measures to mitigate hydro-climatic risks. In coordination with PMD, PDMA translates seasonal and short-term forecasts into targeted early warnings and district-level preparedness actions. Ahead of the 2025 monsoon season, PDMA is enhancing its early warning systems, conducting flood simulations, and coordinating with local authorities to ensure rapid response capabilities. Key measures include pre-positioning emergency supplies, clearing urban drainage systems in high-risk cities like Lahore and Gujranwala, monitoring river flows especially the Chenab near Marala Headworks and issuing advisories to farmers and health services.

Additionally, PDMA is activily working on heatwaves especially for southern Punjab, where above-normal temperatures are projected. These proactive efforts aim to reduce the impact of floods, droughts, and heatwaves, safeguarding both lives and livelihoods.

CHAPTER 4
GENDER-RESPONSIVE AND DISABILITY-INCLUSIVE DISASTER MANAGEMENT

4.1 INTRODUCTION TO GENDER MAINSTREAMING IN DISASTER RISK REDUCTION

Disasters affect men, women, and marginalized groups in different ways, and recognizing these differences is essential for building an inclusive and resilient society. Gender mainstreaming in Disaster Risk Reduction (DRR) involves integrating gender perspectives into policies, planning, and practices to ensure that the specific needs, vulnerabilities, and capacities of all genders are acknowledged and addressed across all phases of disaster management from preparedness and response to recovery and rehabilitation.

In Punjab, particularly in flood-prone districts, women and girls often experience compounded vulnerabilities due to socio-economic disparities, cultural norms, and limited access to resources or decision-making platforms. After the 2010 floods, many women faced mobility restrictions due to financial and familial constraints, limiting their access to critical aid services such as food assistance, medical care especially reproductive healthcare and sanitation facilities. The absence of national identification cards (NICs), often a prerequisite for receiving relief, further impeded many women's ability to access essential support.

Integrating gender-sensitive approaches into DRR enhances the effectiveness of disaster management by promoting equitable participation and access to services. During the 2024 monsoon response, there was a heightened recognition of the importance of collecting gender-disaggregated data, involving women in community-level preparedness programs, and establishing women-friendly relief camps equipped with safe access to sanitation and healthcare. To cope up this, PDMA Punjab has initiated to collect the vulnerable group data into preparedness phase for evacuation planning and resource mobilization.

PDMA Punjab recognizes the critical need to ensure inclusive disaster risk reduction and emergency response systems that specifically address the needs of pregnant women, lactating mothers, neonates, and persons with disabilities. These individuals often require specialized support in terms of mobility, healthcare, nutrition, and protection.

Figure 33 Vulnerable Communities in Flood

4.2 PREGNANT WOMEN

Pregnant women represent a particularly vulnerable group during disasters, facing heightened risks such as low birth weight, premature delivery, and infant mortality. Many are forced to deliver outside healthcare facilities, often without access to their medical records or essential medications, including prenatal vitamins. Exposure to infectious diseases in crowded shelters adds further risk to both mothers and unborn children. Moreover, in the absence of awareness, relief workers may inadvertently administer vaccines or treatments contraindicated during pregnancy.

Following recent monsoon rains, floods in Pakistan, an estimated 6.4 million people are in need of assistance, including over 1.6 million women of reproductive age. Government estimates indicate that approximately 33 million people across the country have been affected, among whom 8.2 million are women of reproductive age. According to the United Nations Population Fund (UNFPA), nearly 650,000 pregnant women in flood-affected areas require maternal health services, and around 73,000 women are expected to deliver within the month—requiring skilled birth attendants, newborn care, and ongoing support. The destruction of nearly one million homes has further exacerbated the risk of gender-based violence (GBV), particularly for women and girls.

Recognizing that pregnancy and childbirth cannot be postponed during emergencies, PDMA Punjab is proactively integrating maternal health and gender-responsive measures into its disaster contingency planning. It is working closely with local health authorities, humanitarian partners, and community leaders to ensure emergency response plans accommodate the specific needs of women and girls, especially those who are pregnant and lactating. The total number of pregnant women in vulnerable districts of punjab is shown in the (Figure 34)

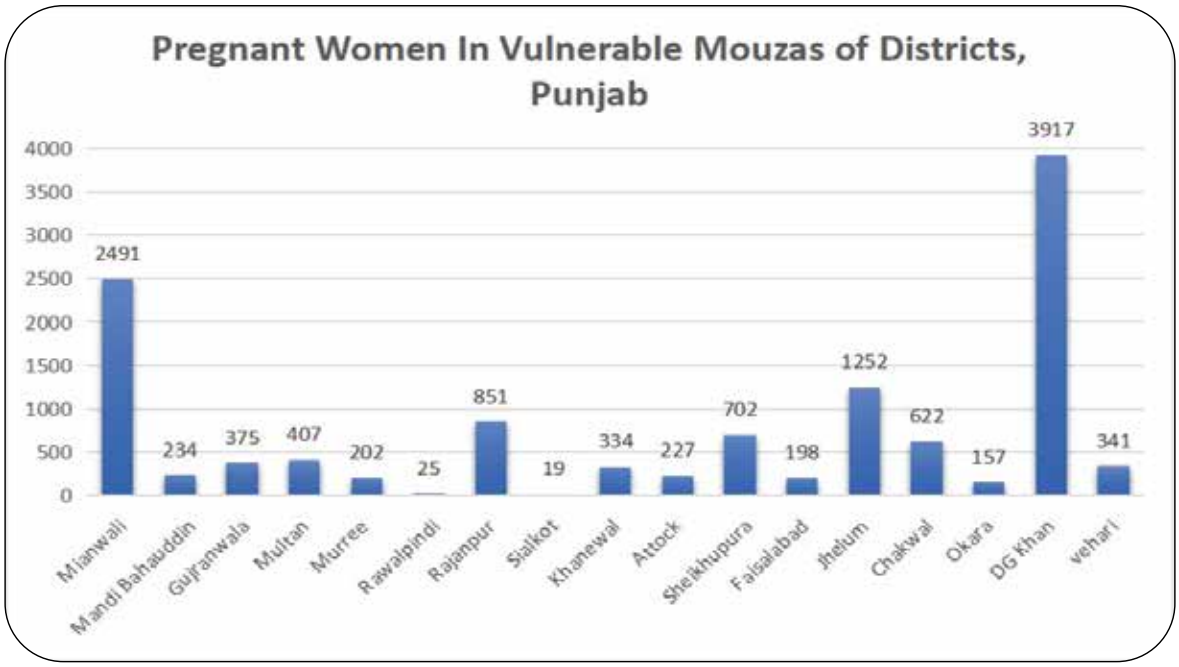


Figure 34 Pregnant Women in Vulnerable Mouzas of Punjab District

4.3 LACTATING MOTHERS

Lactating mothers require access to safe environments, proper nutrition, and privacy to breastfeed their children needs that often go unmet during disaster scenarios. PDMA Punjab has made it a priority to incorporate the specific requirements of lactating mothers into its monsoon contingency planning.

Nutrition support is also a key concern. Lactating mothers have increased dietary needs, and disaster relief kits must include food supplements, clean drinking water, and hygiene supplies suitable for both the mother and the infant. Health workers stationed at camps monitor the nutritional status of both mothers and infants to prevent malnourishment and disease outbreaks. The total number of Lactating women in vulnerable districts of punjab is shown in the (Figure 35)

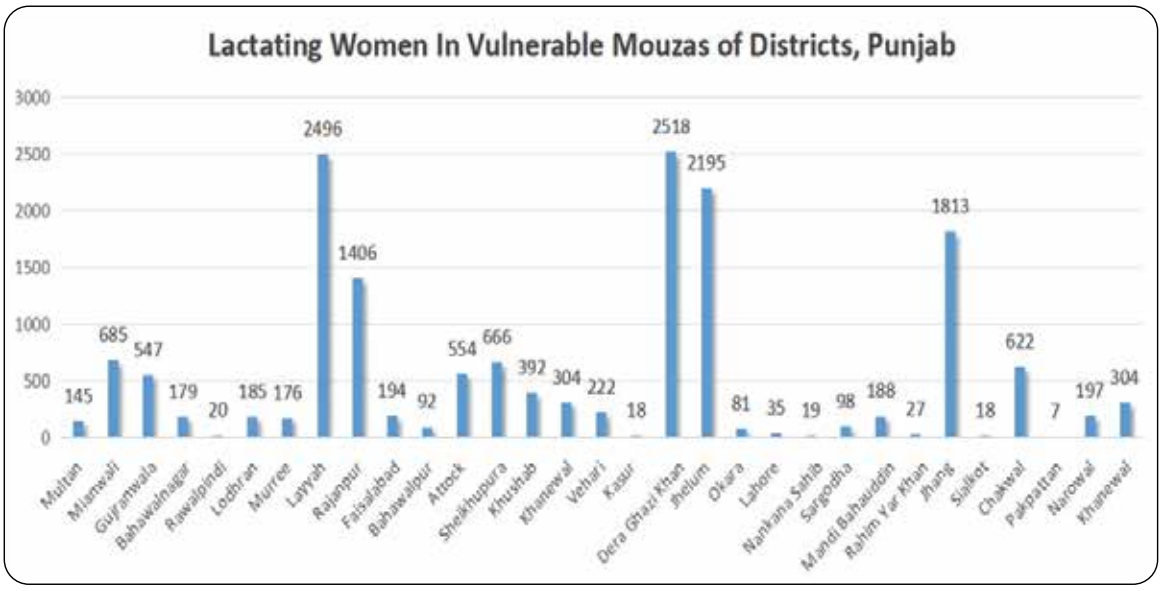


Figure 35 Lactating Mothers in Vulnerable Mouzas of Punjab District

4.4 PERSONS WITH DISABILITIES

Parallel to gender considerations, PDMA Punjab is committed to addressing the distinct needs of persons with disabilities by promoting accessible evacuation procedures, inclusive shelter design, and ensuring that emergency responders are trained to effectively support individuals with physical or mental disabilities. People with hearing impairments may miss critical evacuation instructions, while those with visual impairments may be excluded from visual-based warnings. Wheelchair users often encounter transportation barriers and shelters lacking accessible infrastructure. Individuals with mental disabilities may be misunderstood, denied shelter, or improperly institutionalized. Relief distribution must include assistive devices such as wheelchairs, crutches, and hearing aids as essential supplies.

To ensure meaningful inclusion, persons with disabilities must be involved in preparedness initiatives and the development of early warning systems. By embedding these inclusive practices into contingency planning, PDMA Punjab aims to reduce vulnerabilities and promote equitable disaster response outcomes for all segments of the population.

Figure 36 Person with Disability

4.5 PSYCHOSOCIAL SUPPORT IN DISASTER RESPONSE

Psychosocial support is another essential yet frequently under-prioritized dimension of disaster response. Disasters such as monsoon floods can trigger immense psychological stress, trauma, and grief particularly for children, pregnant women, elderly persons, and individuals who have lost loved ones or livelihoods. Acknowledging these mental health challenges, PDMA Punjab has institutionalized psychosocial support as a fundamental element of inclusive disaster management. Dedicated mental health services available at all major relief and evacuation centers. In collaboration with the Health and Social Welfare Departments, PDMA ensures the deployment of qualified psychiatrists, psychologists, and trained counselors, as well as the activation of mobile mental health teams in high-impact districts

4.6 STRENGTHENING INTER-AGENCY COLLABORATION FOR INCLUSIVE DRR

Effective disaster response, particularly during the monsoon season, is contingent upon strong inter-agency collaboration. PDMA Punjab emphasizes coordinated action with the Health and Social Welfare Departments at both provincial and district levels to ensure timely, adequate, and integrated support services for vulnerable populations. By institutionalizing inclusive and rights-based approaches into its disaster preparedness and response frameworks, PDMA Punjab strives to enhance community resilience, protect at-risk groups, and uphold the dignity and well-being of all individuals affected by disasters.

CHAPTER 5
PREPAREDNESS AND RESPONSE FRAMEWORK
2025

The Provincial Disaster Management Authority (PDMA) Punjab undertakes a comprehensive pre-monsoon preparedness strategy to mitigate the impacts of seasonal flooding and ensure timely and coordinated response across the province. These preparations are rooted in early planning, inter-departmental coordination, infrastructure readiness, and robust community engagement. The following section outlines the core components of PDMA's pre-monsoon actions along with a detailed calendar of scheduled activities for 2025

5.1 STRATEGIC OBJECTIVES OF PRE-MONSOON PREPAREDNESS AND ACTIVITY FRAMEWORK 2025

- To establish operational readiness of emergency response systems.
- To ensure timely dissemination and compliance of contingency plans.
- To inspect and validate the integrity of flood protection infrastructure.
- To position equipment and essential relief items at high-risk locations.
- To enhance inter-agency coordination and streamline communication protocols.
- To raise public awareness and build community resilience through mock drills and simulations.

(Table 5) delineates the primary undertakings scheduled for the forthcoming monsoon flood season. PDMA will disseminate the temporal framework of these activities to all District Disaster Management Authorities (DDMAs), ensuring proactive measures are in place to effectively address flood-related exigencies.
In addition to the above-mentioned activities, the following pre-flood arrangements are also mandatory at administrative levels.

- Comprehensive documentation detailing the human resources involved, delineating their respective roles and responsibilities, as well as ensuring the operational readiness of machinery, equipment, and technological tools.
- DDMAs are tasked with guaranteeing an ample supply of materials and machinery at vulnerable locations.
- SOPs on urban flooding has been issued (Annexure VI)
- The Communication & Works Department is entrusted with the formulation of a Contingency Plan and the maintenance of essential infrastructure, particularly the Roads and Bridges Network, in accordance with established Standard Operating Procedures (SOPs) during the flood season
- The Health and Livestock Departments are obligated to ensure the availability of essential medicines, vaccines, and veterinary services in flood-prone regions and camps.
- Coordination meetings involving the Pakistan Army, PDMA, NDMA, and Rescue 1122 officials are convened to enhance collaboration and expedite response efforts during the flood season.

Table 5 Activity Calendar for Monsoon 2025

Sr. #	ACTIVITIES	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Responsibility
1. Contingency Planning														
1.1	District Flood Contingency Plans		30th March											DCs
1.2	Departmental Flood Contingency Plans		30th April											All Secretaries
1.3	Provincial Flood Contingency Plan				15th May									PDMA
2. Preparedness														
2.1	1st Mock Exercise (Operation & Maintenance)				April									
	2nd Mock Exercises					May								PDMA, DCs, DRFs
	3rd Mock Exercises						June							PDMA, DCs, DRFs
2.2	DDMA Meetings													DCs
2.3	Third Party Validation (TPV), Readiness Certificates and Pre-positioning of Equipment						15th June							Commissioners, PDMA, DDMAs, DRFs
2.4	Inspection of Flood Protection Bunds (Survey by Army, irrigation, DDMAs)			March till 10th May										Army, PID , DCs
2.5	Army Survey Board (Inspection of Flood fighting Equipment Available with Pak Army)		Feb till 30th April											PDMA,PID, All Corps
2.6	SOPs on Urban Flooding				Circulated to all DCs, DDMAs for Compliance									HUD, PHED & LGs
2.7	De-Silting of Nullahs, Water Channels, Bridges etc.			Mar to 15th June										DDMAs, WASAs, MCs
2.8	Removal of Encroachments (Water Ways, Zamindara Bunds)					30th May								DDMAs, PID, Police
2.9	Pre-Qualification of Firms/Vendors				15th June									PDMA, DDMAs
3. Early Warning														
3.1	Operationalization of Control Rooms/DEOCs						15th June to 15th October							PDMA, DDMAs
3.21	Establishment of Flood Forecasting Center						15th June to 15th October							PDMA, PID, MET

5.2 IMPLICATIONS FOR DISASTER PREPAREDNESS IN PUNJAB

The Monsoon Contingency Plan 2025 has been formulated in the context of increasingly variable climate patterns across Punjab. To institutionalize high-level oversight and interdepartmental coordination, a Cabinet Committee on Flood Response and Preparedness has been constituted (Annexure II). This committee is mandated to steer the province-wide monsoon preparedness efforts, oversee implementation of the contingency plan, ensure inter-agency collaboration, and make strategic decisions based on evolving weather and ground conditions. The committee brings together key provincial ministers, heads of line departments, senior military representatives, and disaster management authorities under a unified platform for informed and timely decision-making.

Infrastructure readiness remains a cornerstone of flood resilience. All critical water management and drainage infrastructure, including dams, barrages, protective embankments, nullahs, canals, culverts, and urban sewerage systems, undergo pre-monsoon inspection and reinforcement. Repair works be completed well in advance, especially in historically vulnerable locations. Regular desilting of major nullahs, strengthening of identified breach points, and the establishment of temporary flood protection structures are essential to control water overflow during peak rainfall events.

Moreover, incorporating the latest PMD monsoon forecasts into district-level contingency planning allows for evidence-based allocation of resources and the pre-positioning of essential relief supplies. Emergency response teams, including Rescue 1122, Civil Defence, Pakistan Army, and volunteers, undergo mock sessions and be deployed strategically based on expected weather impacts.

Finally, the integration of modern data analytics, remote sensing tools, and real-time satellite imagery into decision-making processes enhance situational awareness and help provincial and district authorities adapt quickly to changing weather conditions. As climate unpredictability continues to pose multifaceted threats, PDMA Punjab's Monsoon Contingency Plan 2025 strives to create a more resilient, informed, and coordinated response framework that prioritizes human safety and minimizes disruption to livelihoods and essential infrastructure.

5.3 PRE-MONSOON MOCK EXERCISES IN VULNERABLE DISTRICTS

To enhance preparedness and ensure effective response during monsoon-related emergencies, standard operating procedures have been developed for the planning and execution of pre-monsoon mock drills in all vulnerable districts of Punjab. These mock drills aim to test and strengthen the coordination mechanisms among key stakeholders, including district administrations, emergency services, line departments, and local communities. Each district will design and implement its own scenario-based mock drill plan, focusing on flood-prone areas identified through historical data and risk assessments. The exercises will help evaluate evacuation protocols, communication systems, rescue operations, and emergency medical response, ultimately contributing to a more resilient and responsive disaster management framework for the upcoming monsoon season.

Figure 37 1st Dry Mock Exercise Rajanpur

Figure 38 1st Dry Mock Exercise DG Khan

Figure 39 1st Dry Mock Exercise Muzaffargarh

5.4 DDMA MEETING

DDMA meeting has convened to review the preparedness of Monsoon 2025 in alignment with the guidelines issued by the PDMA. The meeting focused on preparedness measures to effectively respond to potential monsoon-related hazards such as flood Figure 40. Key stakeholders, including district administration, emergency services, health departments, and municipal authorities, were directed to ensure the availability of essential equipment, timely de-silting of drains, and the establishment of relief and medical camps. Emphasis was placed on coordination, early warning dissemination, and community awareness to minimize risks and safeguard lives and property during the upcoming monsoon season.

Figure 40 DDMA Meeting to review the preparedness efforts of monsoon season 2025

5.5 DISTRICT-LEVEL CONTINGENCY PLANS

Each year, in anticipation of the monsoon season, District Disaster Management Authorities (DDMAs) undertake the critical task of meticulously formulating, updating, and refining their disaster risk reduction and response management plans. These district-level plans are comprehensive documents that include detailed assessments of vulnerable areas, identification of high-risk populations, available rescue and relief resources, and logistical arrangements for emergency situations (Figure 41). Along with these plans, DDMAs also submit updated inventories of equipment, machinery, and trained personnel, as well as records of community awareness and preparedness initiatives undertaken at the local level.

All this essential information is systematically compiled and shared with the Provincial Disaster Management Authority (PDMA) to ensure that the provincial monsoon contingency plan reflects the most current and accurate ground realities across all districts. This process is not only pivotal for effective coordination but also for enabling swift mobilization of resources and targeted interventions where and when they are needed the most.

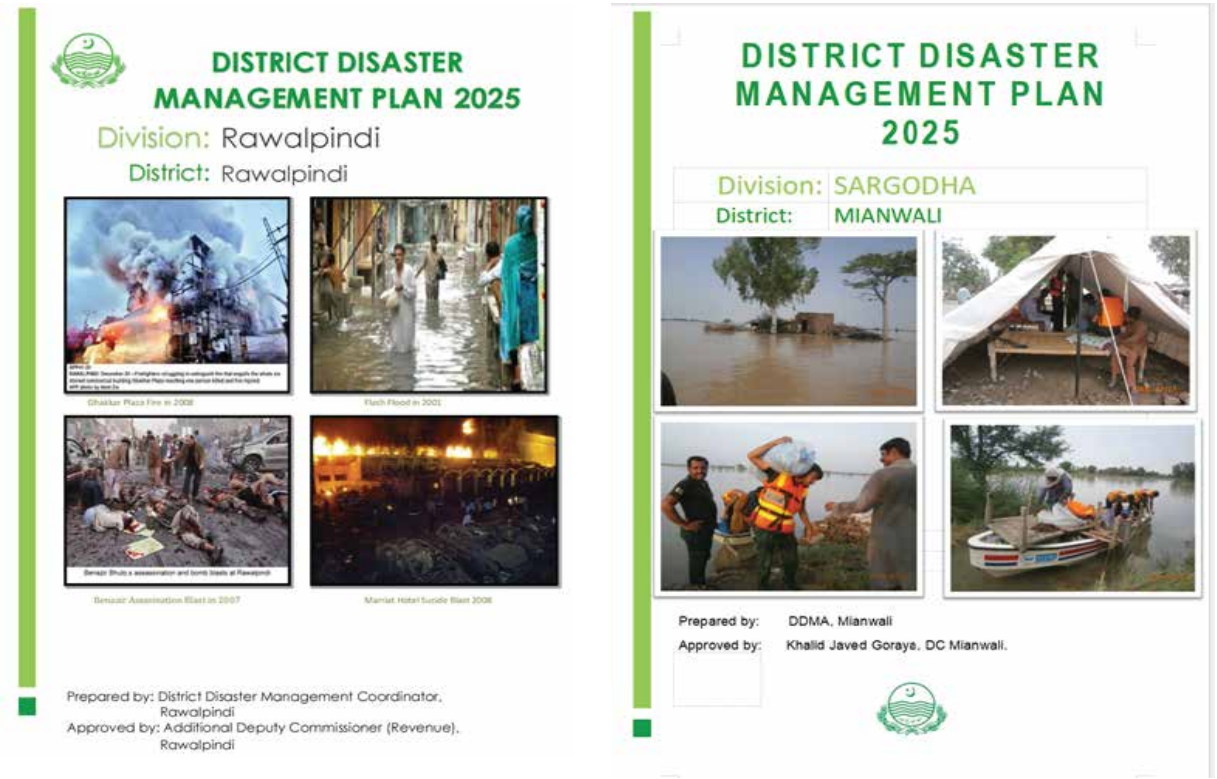


Figure 41: District Contingency Plans

To maintain uniformity and standardization across the province, PDMA Punjab provides standardized templates and guidelines to all districts. These templates serve as a framework to ensure that each DDMA's plan meets essential criteria and covers all necessary components of disaster preparedness, including early warning dissemination, evacuation planning, shelter management, and post-disaster recovery strategies. This harmonized planning approach strengthens the overall resilience of the province and enhances its capacity to respond proactively and efficiently to the challenges posed by the monsoon season.

5.6 SETTING FLOOD ALERT LEVELS

The Provincial Disaster Management Authority (PDMA) of Punjab has established a structured system of alert levels to ensure a proactive and well-coordinated response to potential flood emergencies. These predefined alert levels are based on real-time threat assessments, including rainfall forecasts, river discharge trends, and reports from field units and meteorological sources. The primary objective of setting these alert levels is to trigger the timely activation and escalation of Emergency Operation Centers (EOCs) at the provincial, divisional, and district levels Table 6.

Each alert level corresponds to a specific set of preparedness and response actions ranging from heightened vigilance and coordination meetings during lower-level alerts to full-scale activation of EOCs and deployment of emergency response teams during high-level alerts. This tiered approach allows PDMA and its partner agencies to mobilize resources efficiently, issue early warnings to vulnerable communities, and implement emergency measures in a phased and effective manner.

By adhering to these alert protocols, the PDMA ensures that the flood response mechanism remains dynamic, situation-specific, and capable of scaling operations as the risk escalates, thereby minimizing potential impacts on life, property, and infrastructure.

Table 6 Alert Levels and Corresponding Response Actions Under the District Disaster Management Plan (DDMP)

Alert Level	Description
Level-D (Disaster threat is perceptive)	DDMA shall conduct monthly meetings besides at least 2 mock exercises as per DDMP, well in time, to make the concerned officers/officials understand their role and responsibility for better coordination and testing of rescue and relief equipment. DDMA shall also ensure the physical presence of concerned staff deputed and availability of equipment/resources for all designated vulnerable sites within given time frame during disaster. Vulnerable site inspections and necessary works/action shall be carried out as mitigation measures.
Level-C (Alert warning issued but likelihood of occurrence is less than 100%)	Activities to be undertaken in level D + DDMA shall issue "alert" to all concerned for the vulnerable area. DDMA and 1 control room be made operational 24/7 and ensure availability of all required (available and additional) resources for on call mobilization and monitor the situation. Only DC and DPO shall grant leave according to the situation.
Level-B (HIGH Alert - Disaster threat is imminent)	Activities to be undertaken in level C + DDMA shall respond to the emergency immediately and shall carry out rescue and relief operation as defined in DDMP and shall continuously monitor the situation. Resources of adjoining districts shall be mobilized and Army may be called keeping in view the magnitude of the disaster.
Level-A (Red Alert - Disaster is materialized)	Activities to be undertaken in level B + DDMA shall respond to the emergency immediately and shall carry out rescue and relief operation as defined in DDMP and shall continuously monitor the situation. Resources of adjoining districts shall be mobilized and Army may be called keeping in view the magnitude of the disaster.

5.7 ESTABLISHMENT OF FLOOD CONTROL ROOMS AT PDMA AND DDMAS

Since its inception in 2008, the Provincial Disaster Management Authority (PDMA) has operated the Provincial Emergency Operation Center (PEOC), which functions as the nerve center for command, control, and communication on a continual 24/7 basis. The PEOC has undergone significant upgrades with funding from the World Bank through the "Disaster and Climate Resilient Improvement Project," receiving state-of-the-art, high-tech equipment. It is fully operational and serves as a benchmark for other PEOCs across the nation.

The PEOC facilitates coordinated decision-making among stakeholder departments based on rapid assessments of disasters conducted by district representatives from various departments. For instance, in the event of a breach, the Irrigation Department's representative provides crucial information on the current discharge rate and the potential inundation area, facilitating swift action for rescue, evacuation, and immediate relief efforts.

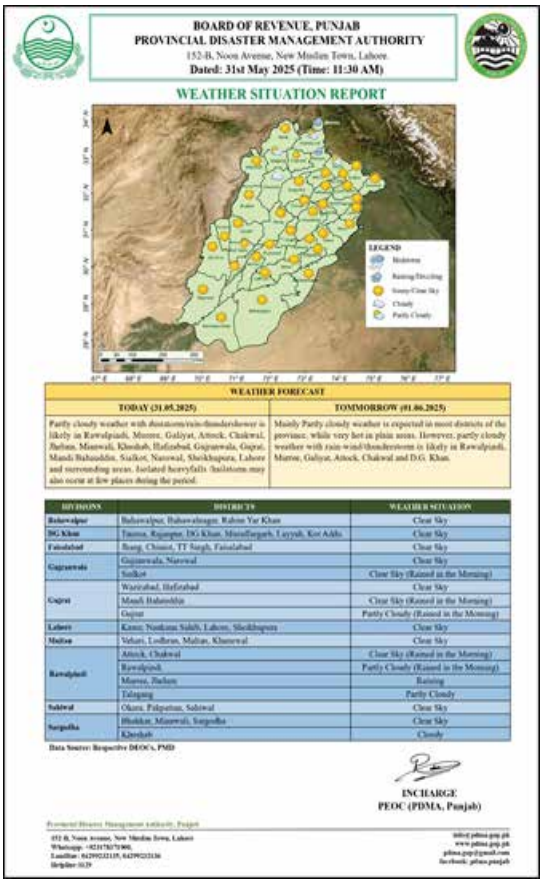
5.8 ROLE OF PEOC IN PDMA PUNJAB

The PEOC functions as the nerve center of the PDMA, playing a pivotal role in disaster preparedness, response, and recovery by monitoring, compiling, and disseminating timely and accurate information to relevant stakeholders at provincial, district, and community levels. Operating round-the-clock, the PEOC ensures that all departments remain vigilant and responsive to emerging hazards. It generates a series of critical reports to support informed decision-making and timely interventions Figure 42. These include Weather Updates, issued every 9 hours covering rainfall, hailstorms, fog, sunshine, cloud cover, and snowfall with increased frequency during extreme weather conditions. The Stubble Burning Reports are compiled on a daily, monthly, and yearly basis, documenting the number and locations of incidents impacting air quality and visibility, and guiding policy measures. The Daily Incident Report captures a wide range of emergencies occurring in the last 24 hours, including urban/rural fires, traffic accidents, drowning, chemical spills, and natural hazard impacts along with data on casualties, injuries, and damages to crops, livestock, and infrastructure. This feeds into the Monthly Cumulative Incident Report, a comprehensive analysis identifying high-risk areas and recurring hazards.

In response to wildfires, the PEOC issues the Daily Major Forest Fire Report as needed, detailing fire locations, scale, and response measures. These are compiled into the Monthly Cumulative Forest Fire Report to track seasonal trends and improve land and forest management strategies. To ensure high-level situational awareness, the Chief Minister (CM) Alert Report is prepared every 24 hours during regular periods and every 12 hours during the flood season, summarizing the province-wide hazard landscape and required actions. The PEOC also issues critical Alerts related to heatwaves, water discharge levels (low, medium, high), river and hill torrent activity, and heavy or unseasonal rainfall, ensuring proactive preparedness across departments and communities.

In addition, Weather Advisories are issued to forecast potential extreme weather events such as thunderstorms, windstorms, rainfall, and lightning, functioning as an early warning tool. During the flood season, the Water Gauge Level Reports are generated every 6 hours, or more frequently if water levels rise, to monitor rivers, nullahs, and hill torrents, supporting evacuation planning and early warnings. After the monsoon season, the Flood Season Analysis Report is developed to assess rainfall patterns, flood peaks, and discharge trends, guiding infrastructure planning and early warning improvements. Finally, the Final Monsoon Relief and Rescue Report provides a detailed end-of-season account of all rescue and relief operations, highlighting district-level efforts, resource utilization, response outcomes, and operational challenges.

To complement these centralized efforts, the PDMA has established District Emergency Operation Centers (DEOCs) in every district across Punjab. These centers are equipped with trained personnel, power backup, internet access, multiple communication channels, and duty rosters aligned with disaster severity—ensuring decentralized yet coordinated emergency management throughout the province.



BOARD OF REVENUE, PUNJAB
PROVINCIAL DISASTER MANAGEMENT AUTHORITY
152-B, Noon Avenue, New Muslim Town, Lahore.
Dated: 31st May 2025 (Time: 11:30 AM)

WEATHER SITUATION REPORT

WEATHER FORECAST

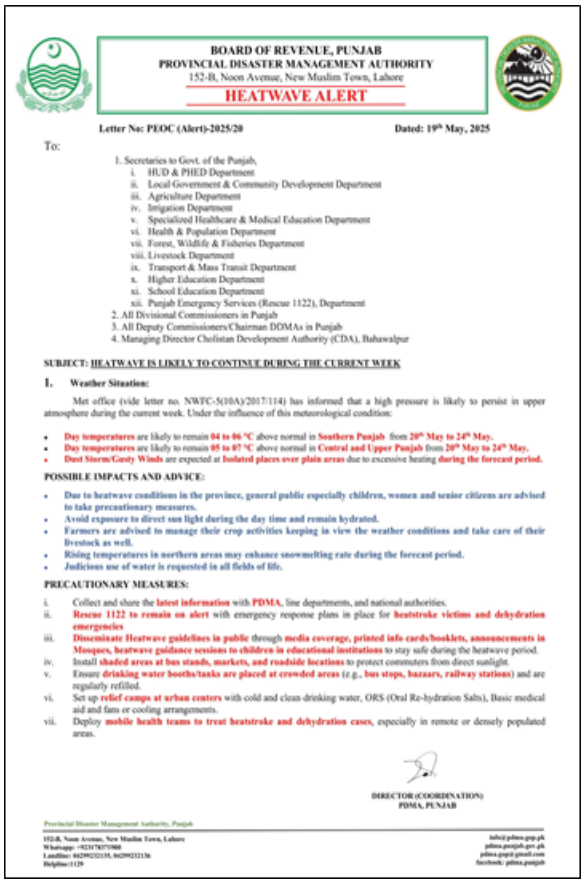
TODAY (31.05.2025)	TOMMORROW (01.06.2025)
Partly cloudy weather with dust storm/rain-thundershower is likely in Rawalpindi, Murree, Gujiyat, Attock, Chakwal, Jhelum, Mianwali, Khushab, Hafizabad, Gujranwala, Gujrat, Mandi Bahauddin, Sialkot, Narowal, Sheikhupura, Lahore and surrounding areas. Isolated heavyfalls /hailstorm may also occur at few places during the period.	Mainly Partly cloudy weather is expected in most districts of the province, while very hot in plain areas. However, partly cloudy weather with rain-wind/thunderstorm is likely in Rawalpindi, Murree, Gujiyat, Attock, Chakwal and D.G. Khan.

DIVISIONS	DISTRICTS	WEATHER SITUATION
Bahawalpur	Bahawalpur, Bahawalnagar, Rahim Yar Khan	Clear Sky
DG Khan	Taunsa, Rajanpur, DG Khan, Muzaffargarh, Layyah, Kot Addu	Clear Sky
Faisalabad	Jhang, Chiniot, TT Singh, Faisalabad	Clear Sky
Gujranwala	Gujranwala, Narowal	Clear Sky
	Sialkot	Clear Sky (Raised in the Morning)
Gujrat	Wazirabad, Hafizabad	Clear Sky
	Mandi Bahauddin	Clear Sky (Raised in the Morning)
	Gujrat	Partly Cloudy (Raised in the Morning)
Lahore	Kasur, Nankana Sahib, Lahore, Sheikhupura	Clear Sky
Multan	Vehari, Lodhran, Multan, Khanewal	Clear Sky
Rawalpindi	Attock, Chakwal	Clear Sky (Raised in the Morning)
	Rawalpindi	Partly Cloudy (Raised in the Morning)
	Murree, Jhelum	Raining
	Talagang	Partly Cloudy
Sahiwal	Okara, Pakpattan, Sahiwal	Clear Sky
Sargodha	Bhakkar, Mianwali, Sargodha	Clear Sky
	Khushab	Cloudy

Data Source: Respective DEOCs, PMD

INCHARGE
PEOC (PDMA, Punjab)

Weather Situation Report



BOARD OF REVENUE, PUNJAB
PROVINCIAL DISASTER MANAGEMENT AUTHORITY
152-B, Noon Avenue, New Muslim Town, Lahore

HEATWAVE ALERT

Letter No: PEOC (Alert)-2025/20 Dated: 19th May, 2025

To:

1. Secretaries to Govt. of the Punjab,
   i. HUD & PHED Department
   ii. Local Government & Community Development Department
   iii. Agriculture Department
   iv. Irrigation Department
   v. Specialized Healthcare & Medical Education Department
   vi. Health & Population Department
   vii. Forest, Wildlife & Fisheries Department
   viii. Livestock Department
   ix. Transport & Mass Transit Department
   x. Higher Education Department
   xi. School Education Department
   xii. Punjab Emergency Services (Rescue 1122), Department
2. All Divisional Commissioners in Punjab
3. All Deputy Commissioners/Chairman DDMAs in Punjab
4. Managing Director Cholistan Development Authority (CDA), Bahawalpur

SUBJECT: HEATWAVE IS LIKELY TO CONTINUE DURING THE CURRENT WEEK

I. Weather Situation:

Met office (vide letter no. NWFC-5(10A)/2017/114) has informed that a high pressure is likely to persist in upper atmosphere during the current week. Under the influence of this meteorological condition:

- Day temperatures are likely to remain 04 to 06 °C above normal in Southern Punjab from 20th May to 24th May.
- Day temperatures are likely to remain 05 to 07 °C above normal in Central and Upper Punjab from 20th May to 24th May.
- Dust Storm/Gusty Winds are expected at isolated places over plain areas due to excessive heating during the forecast period.

POSSIBLE IMPACTS AND ADVICE:

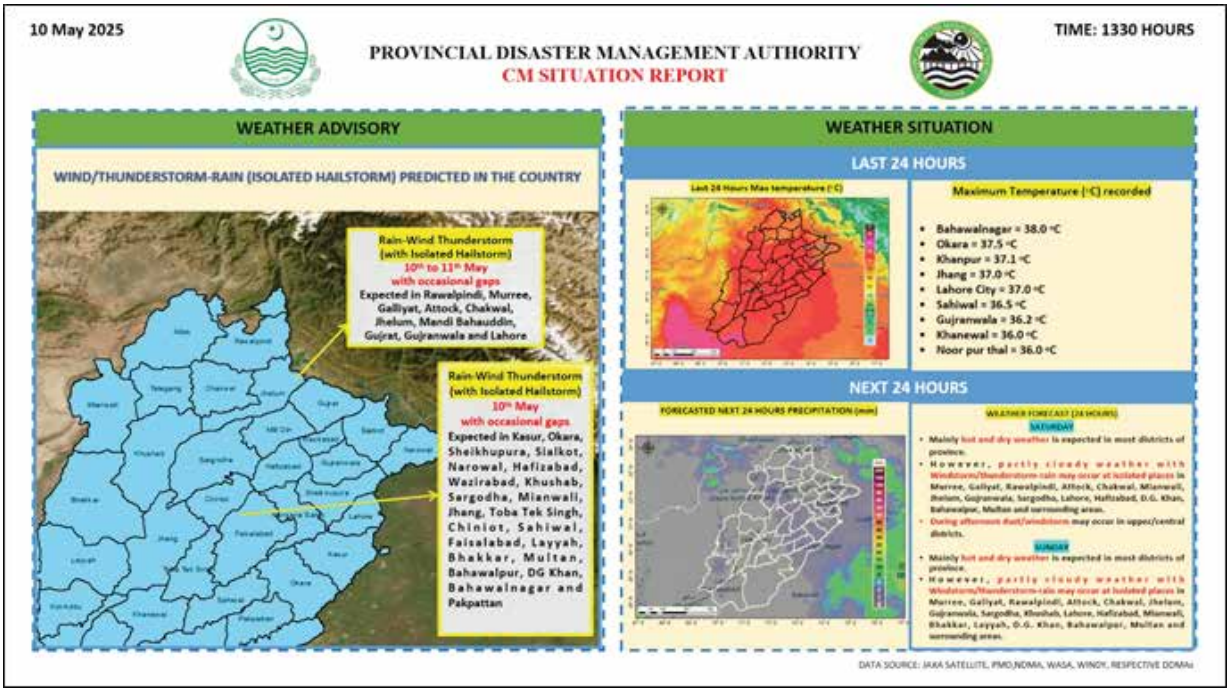
- Due to heatwave conditions in the province, general public especially children, women and senior citizens are advised to take precautionary measures.
- Avoid exposure to direct sun light during the day time and remain hydrated.
- Farmers are advised to manage their crop activities keeping in view the weather conditions and take care of their livestock as well.
- Rising temperatures in northern areas may enhance snowmelting rate during the forecast period.
- Judicious use of water is requested in all fields of life.

PRECAUTIONARY MEASURES:

i. Collect and share the latest information with PDMA, line departments, and national authorities.
ii. Rescue 1122 to remain on alert with emergency response plans in place for heatstroke victims and dehydration emergencies
iii. Disseminate Heatwave guidelines in public through media coverage, printed info cards/booklets, announcements in Mosques, heatwave guidance sessions to children in educational institutions to stay safe during the heatwave period.
iv. Install shaded areas at bus stands, markets, and roadside locations to protect commuters from direct sunlight.
v. Ensure drinking water booths/tanks are placed at crowded areas (e.g., bus stops, bazaars, railway stations) and are regularly refilled.
vi. Set up relief camps at urban centers with cold and clean drinking water, ORS (Oral Re-hydration Salts), Basic medical aid and fans or cooling arrangements.
vii. Deploy mobile health teams to treat heatstroke and dehydration cases, especially in remote or densely populated areas.

DIRECTOR (COORDINATION)
PDMA, PUNJAB

Heatwave Alert



CM Alert Report

Figure 42: Reports Generated By PEOC

5.9 DUTY ROSTERS FOR EMERGENCY OPERATION CENTERS

The Provincial Disaster Management Authority (PDMA) has established a comprehensive Duty Roster to effectively manage unusual rainfall and flood emergencies. A director-level officer is appointed as the head of the flood control room, supported by a multidisciplinary team including representatives from the PDMA, Agriculture, Livestock, Irrigation, Local Government, Education, Health, Construction & Works, Social Welfare Department, and WASA. This team operates around the clock in various shifts to ensure the flood control room is fully functional. The primary responsibilities of the team include:

1. Data Collection: Gathering information on rainfall from the Meteorological Department and river flow/discharge data from the Flood Forecasting Division in Punjab.
2. Alert Generation and Dissemination: Producing and distributing real-time weather and flood alerts to all relevant stakeholders.
3. Media Monitoring: Observing electronic media and video walls for disaster updates, verifying information with the respective District Administration, and coordinating necessary response actions.
4. Information Dissemination: Utilizing WhatsApp groups, SMS portals, and other communication tools to share information and compile reports on various natural disasters.
5. Coordination with DEOCs: Maintaining close communication with District Emergency Operations Centers for information exchange and follow-up actions.
6. Document Management: Handling the filing and emailing of all correspondence related to disasters, ensuring meticulous record-keeping.
7. Report Compilation: Assembling detailed reports on losses and damages caused by floods, rainstorms, thunderstorms, lightning strikes, and drowning incidents for distribution to the relevant departments.

5.10 DESILTING OF NULLAHS & STREAMS

In anticipation of the monsoon season, municipal bodies such as WASA, Municipal Corporations (MCs), and Provincial Irrigation Departments (PIDs) engage in the essential task of desilting crucial nullahs in both urban and rural landscapes (Figure 43, Figure 44, and Figure 45). This proactive measure ensures unimpeded water flow during periods of heavy rainfall and potential flooding, safeguarding communities against the adverse effects of inundation.

Figure 43 Desilting Activity of Nankana Sahib

Figure 44 Desilting Activity of DG Khan

Figure 45 Desilting Activity of Lodhran

5.11 REVIEW OF FLOOD PROTECTION EMBANKMENTS

A comprehensive list delineates vulnerable critical points and protective bunds. Given the consistent rainfall and natural erosion over time, the structural integrity of these installations gradually deteriorates, rendering them increasingly susceptible. Hence, the respective departments maintain vigilant oversight of these critical locations, conducting essential repairs to fortify the bunds in anticipation of the monsoon season.

5.12 EVALUATION OF BREACH-PRONE POINTS

To mitigate the risk of flooding, designated breaching sections are strategically established along river embankments to divert excess water flow during exceptionally high flood events. These sections are meticulously operated by committees led by respective Deputy Commissioners, prioritizing the safety of major hydraulic structures such as Head-works, Barrages, Bridges, and urban centers.

Across Punjab, there are a total of 19 breaching sections distributed along various rivers. The Irrigation Department oversees operations for 13 of these sections, while the Pakistan Railway and NHA/C&W Department manage 4 and 2 sections, respectively. Although breaching activities may pose potential risks to communities residing near these points, they are imperative for safeguarding vital infrastructure and urban areas from inundation during severe flooding.

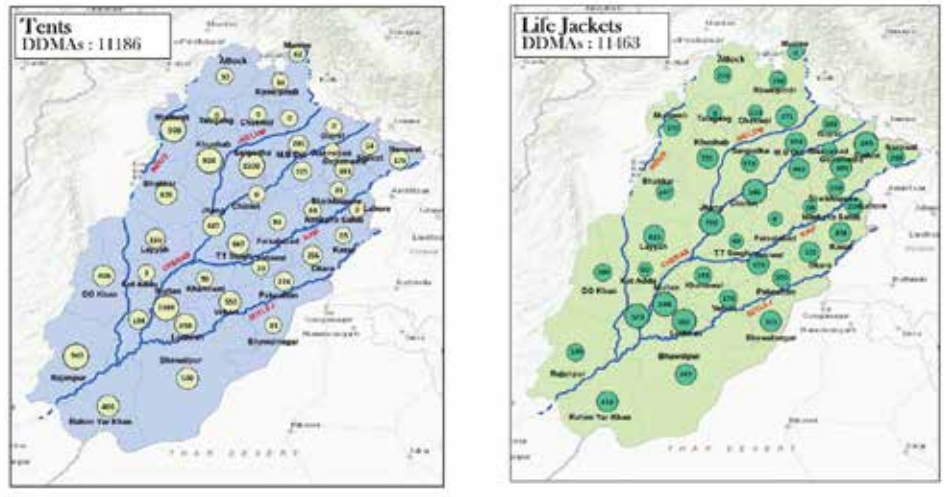
During the monsoon season, the district administration maintains vigilant oversight to swiftly evacuate populations and safeguard their livelihood assets, ensuring their relocation to safer areas.

5.13 DEPLOYMENT OF RESOURCES

A comprehensive inventory of essential rescue and relief equipment has been prepared and updated for the 2025 monsoon season (Annexure I). These assets are strategically pre-positioned in high-risk districts to enable swift response during flood emergencies. This deployment is informed by hazard vulnerability assessments, historical flood impact data, population density, and logistical access to remote or at-risk communities.

The strategy emphasizes a pre-positioned, district-specific allocation of life-saving assets including rescue boats, trained rescue personnel, medical response teams, and emergency relief supplies Figure 46. The objective is to reduce response time, enable immediate lifesaving actions, and enhance resilience through localized preparedness.

(a) (b)



(c)

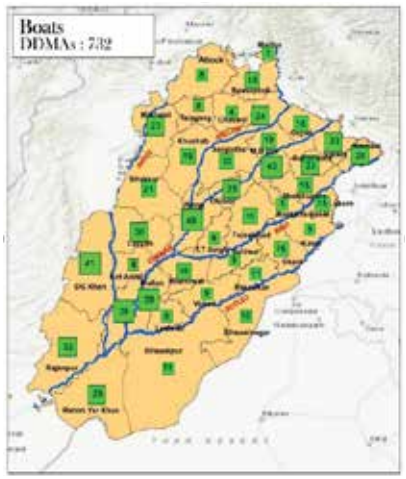


Figure 46:Deployment of Resources (a) Tents (b) Life Jackets (c) Boats

CHAPTER 6
MULTI-HAZARD VULNERABILITY & RISK ASSESSMENT

6.1 MULTI-HAZARD VULNERABILITY AND RISK ASSESSMENT (MHVRA)

The Multi-Hazard Vulnerability and Risk Assessment (MHVRA) is a critical instrument developed to systematically identify, analyze, and mitigate risks associated with natural hazards particularly floods in Punjab. As a foundational component of disaster risk reduction, MHVRA enables policymakers and planners to make informed decisions by providing evidence-based insights into the vulnerabilities of populations, infrastructure, and geographic regions.

Figure 47 Monitoring Dashboard of MHVRA

The initiative has recently commenced in Dera Ghazi Khan (DG Khan) Figure 48 and is being scaled across the other districts of Punjab. This expansion marks a significant advancement in Punjab's commitment to risk-informed disaster management and resilient development.

Figure 48: Flood Plain Survey Inauguration in DG Khan

6.1.1 BACKGROUND

Punjab has experienced recurrent and increasingly severe flooding in recent decades, notably in 2010, 2014, and 2022. These events resulted in widespread destruction, economic setbacks, and the displacement of vulnerable communities. Monsoon-driven seasonal flooding, particularly from July to September, continues to threaten low-lying settlements, agricultural zones, and critical infrastructure situated along floodplains.

A previous MHVRA conducted in 2017 under the World Bank-supported Disaster and Climate Resilience Improvement Project (DCRIP) covered 20 flood-prone districts along the Indus, Chenab, and Jhelum rivers. However, the evolving climate landscape and new risk exposures necessitate an updated and expanded assessment. The revised MHVRA will now include the Ravi and Sutlej river basins, Hill Torrents in DG Khan, Rajanpur, Mianwali, and Khushab, and Nullahs in Sialkot and Narowal.

The updated MHVRA aims to:

- Identify high-risk areas with precision,
- Develop targeted mitigation and adaptation strategies,
- Inform the implementation of the Punjab Floodplain Regulation Act, 2016.

6.1.2 COMPONENTS OF FLOODPLAIN SURVEY FOR MHVRA

The floodplain survey comprises several interlinked components, each contributing to the accuracy and utility of the overall risk assessment framework:

6.1.2.1 GIS MAPPING AND FLOODPLAIN DELINEATION

High-resolution mapping of rivers, hill torrents, and drainage networks enables the delineation of flood-prone areas. GIS and remote sensing tools analyze terrain, land cover, hydrological flows, and elevation data to define flood risk zones with precision.

6.1.2.2 SATELLITE-BASED SETTLEMENT IDENTIFICATION

High-resolution satellite imagery is used to detect formal and informal human settlements within flood-prone areas. This helps identify encroachments and vulnerable communities, supporting legal compliance, urban planning, and resettlement strategies.

6.1.2.3 FIELD DATA COLLECTION TOOLS

A mobile-based field data collection application is developed to capture real-time, location-tagged information from the ground. It gathers household-level vulnerability data, records conditions of critical infrastructure, and identifies local hazard hotspots.

6.1.2.4 DETAILED RISK ASSESSMENT

Data from GIS, satellite imagery, and field surveys are synthesized to assess exposure and vulnerability across sectors particularly health, education, housing, and transport infrastructure. This prioritizes intervention zones at district and tehsil levels.

6.1.2.5 FLOOD SIMULATION AND RISK VISUALIZATION

he Flood Simulation Mapper dashboard provides dynamic flood modeling based on meteorological forecasts, terrain data, and river discharge simulations. It visualizes flood extent, depth, and flow velocity for contingency planning and early warning Figure 49.

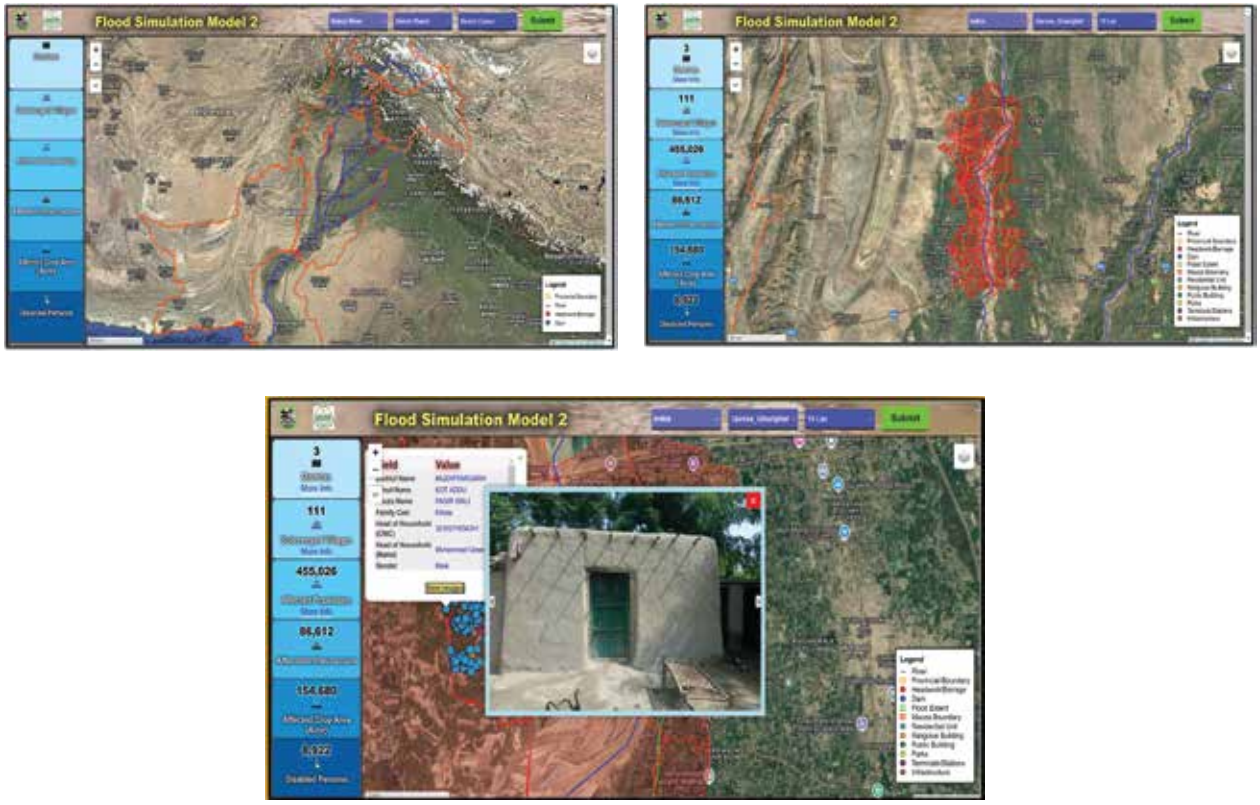


Figure 49 FLood Simulation Model

6.1.2.6 ENHANCED EARLY WARNING SYSTEMS

Findings from the floodplain survey feed directly into early warning mechanisms. Risk-specific, localized alerts can be disseminated via digital platforms and community-based systems, improving lead times and preparedness actions.

6.1.2.7 STRATEGIC RELOCATION AND RESILIENCE PLANNING

Survey insights identify settlements and critical facilities at risk of recurrent flooding. This information guides strategic relocation efforts to safer zones, minimizing future disaster losses and enhancing long-term resilience.

6.1.2.8 PRIORITIZATION OF PUBLIC SECTOR INVESTMENT

Erosive-prone zones identified through geospatial analysis are targeted for public investment in embankments, flood diversion channels, and land stabilization measures under the Erosive Action Schemes.

6.1.2.9 TARGETED RESCUE AND RELIEF OPERATIONS

Real-time vulnerability data supports efficient planning for relief camps, logistics, and rescue routes. High-risk clusters are pre-identified, allowing swift mobilization of resources and reducing emergency response time.

6.1.2.10 TRANSPARENT COMPENSATION PROCESSES

The integration of satellite imagery and field data ensures transparency in damage assessment and compensation. Beneficiaries are identified using verified geospatial evidence, minimizing errors, fraud, and delays.

6.1.2.11 EVIDENCE-BASED POLICY AND PLANNING

Accurate risk maps and vulnerability profiles guide decision-making in infrastructure development, land-use regulation, and urban expansion. Policies are grounded in real-time, context-specific data for maximum impact.

6.1.2.12 INTER-AGENCY DATA SHARING

All collected data and developed tools are shared with key institutions such as NDMA, FFC, PID, PES, P&D, and C&W. This ensures coordinated disaster response, reduces duplication, and supports integrated development planning.

6.1.3 CONCLUSION

The integration of advanced technologies and systematic field assessments in the MHVRA process significantly enhances Punjab's capacity to understand and manage flood risks. This holistic, data-driven approach enables more accurate risk profiling, efficient emergency response, and long-term resilience building across the province.

By embedding MHVRA into provincial planning systems and decision-support platforms, Punjab is taking a critical step toward climate adaptation and disaster resilience ensuring that no community is left behind in the face of increasing environmental risks.

CHAPTER 7
SECTORAL CONTINGENCY BLUEPRINTS

7.1 FRAMEWORK FOR COORDINATED FLOOD DISASTER PREPAREDNESS AND RESPONSE

Effective disaster risk management, particularly in the context of recurrent monsoon-induced flooding in Punjab, demands a comprehensive, multi-sectoral approach. The Sectoral Blueprints chapter outlines the critical roles and responsibilities of key departments and agencies at the national, provincial, district, and local levels, ensuring a unified and strategic response to flood emergencies.

These blueprints serve as operational guides for all stakeholder institutions, emphasizing pre-disaster preparedness, coordinated emergency response, and post-disaster recovery efforts. Each sector has been assigned specific, actionable tasks aligned with its core mandate and operational capacity, with a strong focus on collaboration, resource readiness, communication, and early warning mechanisms.

From the NDMA to local volunteer networks, this chapter encapsulates a holistic vision for flood contingency planning one that integrates technical expertise, field-level execution, and community engagement. Institutions such as the Flood Forecasting Division, Irrigation Department, Rescue 1122, and DDMA are pivotal in real-time monitoring, early warnings, evacuations, and mitigation. Simultaneously, departments including Health, Agriculture, Food, Social Welfare, and Local Government ensure continuity of essential services and restoration of livelihoods in affected regions.

By detailing the sector-specific responsibilities and interdependencies, this chapter facilitates the development of synchronized response mechanisms, timely decision-making, and efficient deployment of resources. It acts as a vital reference point for operational planning, simulation exercises, and capacity-building initiatives contributing to a resilient and proactive disaster management system for Punjab.

Department	Major/ Specific Tasks
National Disaster Management Authority	**Enhance Capacity Building:** Develop training programs, including simulations and mock drills involving Simex exercises, with the participation of all relevant governmental agencies. **Provide Technical Support and Coordination:** Offer continuous technical assistance to support flood disaster management. **Coordinate Response and Relief Operations:** Organize and streamline efforts to effectively manage relief during flood incidents. **Mobilize Resources and Funds for Flood Relief:** Swiftly allocate financial resources specifically designated for flood response. **Facilitate the Distribution of Relief Supplies:** Assist in the procurement and distribution of essential supplies during flood emergencies

Decapartment	Major/ Specific Tasks
District Disaster Management Authority	**Update Contingency Plans:** Regularly prepare, review, and revise district-level monsoon contingency plans to stay current with evolving conditions. Mock Drills: Organize and ensure active stakeholder participation in mock drills prior to the monsoon season to enhance preparedness. **Community Training and Awareness:** Implement community training and awareness programs to foster effective responses to flood emergencies. **Early Warning Systems:** Establish and continually improve early warning mechanisms, ensuring timely and accurate information dissemination to the public. **Assessment of Damage and Needs:** Conduct thorough damage assessments and coordinate needs fulfillment in collaboration with Provincial Disaster Management Authorities (PDMAs) and humanitarian organizations. **Evacuation and Relief Support:** Facilitate the safe evacuation of those affected by floods, manage relief camps efficiently, and oversee the safe return of evacuees once floodwaters recede.
Flood Forecasting Division	**Meteorological Data Collection and Analysis:** Gather meteorological data to prepare daily weather forecasts, enhancing predictive accuracy. **Hydrological Data Acquisition:** Secure data from precipitation and stream gauging stations to monitor water levels and flow rates. **Data Processing and Forecast Preparation:** Analyze the collected data to develop accurate flood forecasts, including stream-flow and discharge predictions.
Primary & Secondary Healthcare	**Inventory Management:** Regularly review and replenish stocks of essential medicines, vaccines, and other medical supplies to maintain readiness. **Availability of Medical Supplies:** Ensure there is a sufficient supply of medicines and medical equipment available for disaster victims. **Rapid Deployment of Medical Teams:** Organize and prepare mobile medical teams to respond and arrive at disaster sites as quickly as possible to provide immediate care. **Community Health Initiatives:** Implement outreach and community-based activities that focus on crucial public health services such as immunization, sanitation, malaria control, maternal and child health, and family planning.
Agriculture	**Supervision and Coordination of Protective Actions:** Oversee and coordinate efforts to protect stocks, equipment, and machinery from flood damage, ensuring all valuable assets are secured well in advance of any potential threat. **Pre-Deployment of Emergency Repair Resources:** Strategically position necessary machinery and materials at safe, yet accessible locations near vulnerable points to facilitate swift emergency repairs. **Establishing Distribution Protocols for Agricultural Recovery:** Define clear procedures for distributing essential inputs such as seeds and fertilizers to flood-affected farmers, aiding in the timely sowing of subsequent crops. **Strategic Stockpiling at Safe Locations:** Identify and utilize safer and strategic locations within flood-prone districts to maintain reserves of critical agricultural supplies like seeds and fertilizers, ensuring their availability and protection from flood damage.

Decapartment	Major/ Specific Tasks
Irrigation	**Encroachment Management:** Work alongside civil authorities to address encroachments on embankments and spurs, ensuring that waterways are clear and functional. **Water Level Monitoring:** Continuously monitor water levels in major channels and dams to stay ahead of potential flooding events. **Early Warning Issuance:** In the event of rising discharge rates, promptly issue early warnings to the Provincial Disaster Management Authority (PDMA) and other relevant districts to initiate preparedness measures. **Infrastructure Protection:** Ensure the protection and maintenance of barrages, settlements, canals, bunds, and spurs, as well as vital communication infrastructure like railways and highways. This includes reinforcing vulnerable embankments. **Resource Readiness:** Maintain a state of readiness with adequate stocks of stones and other flood-fighting materials available before the monsoon season. **Emergency Response Preparation:** Have plans in place to reinforce or breach sections of embankments if necessary to manage floodwaters safely. **Staff Deployment:** Position irrigation personnel at headworks and critical points, equipped with communication devices to monitor and report on water discharge rates effectively. **Breaching Sections:** Manage and maintain 19 breaching sections throughout the province to divert excess water safely if levels rise significantly.
Cantonment Board Lahore	**Maintenance and Cleanup:** This involves the cleaning and de-silting of roadside drains, removal of garbage, and the repair and maintenance of nullahs and roads within the cantonment area to ensure they are free of obstructions and in good condition for water flow and traffic. **Emergency Response Team:** Setting up a task force specifically designed to address and manage emergency situations effectively. Resource Inventory:Compiling a comprehensive list of all flood-fighting equipment available, ensuring readiness and quick deployment when required.
Transport Department	**Site Assessments:** Conduct thorough surveys and inspections of areas identified as vulnerable to flooding to understand and mitigate risks effectively. **Infrastructure Readiness:** Ensure that all necessary civil work is completed well before the onset of the rainy season to prevent disruptions and damage. **Transportation Logistics:** Regularly review and update plans for transporting flood affectees, ensuring efficient evacuation and support in case of emergencies.

Decapartment	Major/ Specific Tasks
Construction & Works Department	**Complete Essential Repairs Before Rainy Season:** Ensure all crucial repairs and maintenance are finalized before the rainy season begins to minimize the risk of infrastructure damage. **Audit and Update Materials and Equipment:** Conduct a thorough audit of existing materials and equipment, and update inventory as needed to maintain readiness during the rainy season. **Strategically Position Bridging Equipment:** Place adequate bridging equipment in strategic locations near areas prone to damage to ensure swift response and minimize disruptions.
Livestock and Dairy Development	**Preserve Livestock Resources:** Contribute to the preservation of livestock by maintaining reserves of dry fodder and ensuring sufficient stocks of animal feed. **Healthcare Measures:** Execute both preventative and curative healthcare strategies, such as vaccination, parasite control, and treatment for injuries or illnesses in animals. **Inventory Management:** Oversee a detailed inventory of medicines and vaccines, keeping stock levels adequately supplied to support the health and welfare of livestock.
Rescue 1122 Emergency	**Inventory Compilation:** Create a comprehensive inventory of all flood- fighting equipment available for immediate deployment. **Strategic Placement:** Position essential machinery and materials strategically near areas at risk to ensure security and rapid response capability. **Preparedness Protocol:** Develop a protocol for regular simulated exercises and drills to heighten readiness for potential flood-related emergencies.
Home Department (Civil Defence, Police)	**Telecommunications Upkeep:** Perform regular maintenance and repairs to ensure uninterrupted operation of telecommunication infrastructure. **Security Protocols:** Enforce strict security measures at evacuation sites, cleared zones, and designated relief facilities. **Traffic Management:** Oversee traffic flow and coordinate the development of alternative routes to enhance navigation efficiency. **Resource Deployment:** Allocate manpower, resources, and machinery according to the needs specified by local authorities to assist the community. **Personnel Training:** Provide training sessions to staff, including support to military personnel in motorboat operation, first aid skills, and lifesaving techniques.
Local Government & Community Development	**Pump Set Inspection:** Thoroughly inspect de-watering pump sets held by local governments to facilitate the removal of rain or flood water from low- lying urban areas. **Well Maintenance:** Guarantee timely repairs of any malfunctioning wells. Strategic Placement: Position de-watering sets strategically in low-lying areas to optimize water removal efficiency.

Decapartment	Major/ Specific Tasks
Information and Culture	**Ongoing Public Information Campaign:** Continuously educate the population about managing flood disaster situations through sustained informational efforts. **Flood Information Cell:** Set up and activate a dedicated information cell within flood warning centers to disseminate crucial updates. **Media Utilization for Awareness:** The Provincial Disaster Management Authority (PDMA) coordinate with information and culture department to frequently run awareness campaigns using various mediums, including print media through national newspapers, electronic media through television commercials (TVCs), and social media platforms. Additionally, district- level awareness campaigns are conducted using local media such as local newspapers and local cable channels, as well as village-level announcements made through mosques
Food Department	**Warehouse Protection:** Safeguard storage facilities against floods and rainfall to prevent damage. **Strategic Stockpiling:** Identify and utilize safer, strategic locations within vulnerable districts for the storage of food commodities. **Food Stock Availability:** Maintain sufficient levels of food stocks to ensure consistent availability.
Social Welfare Department	**Collaborative Relief Efforts:** Coordinate with NGOs and aid agencies to facilitate the distribution of relief goods to flood victims. **Operational Support:** Aid local administrations in rescue, evacuation, and relief operations to enhance efficiency and effectiveness. **Victim Support Services:** Provide guidance and counseling to flood victims, offering emotional and practical support during recovery.
Housing Urban Development & PublicHealth Engineering Department	**Well De-chlorination:** Implement de-chlorination processes for all wells in the flood-affected areas. **Sanitation Enhancement:** Enhance sanitation in flood-affected areas and relief camps. **Water Supply Regulation:** Re-assess and update the plan for regulating water supply.
Army / 4 Corps	**Flood Protection Inspection:** Conduct surveys and inspections of flood protection infrastructure. **Breaching Sections Preparation:** Prepare and activate breaching sections upon request from the Irrigation Department. **Medical Aid and Evacuation:** Organize medical aid and facilitate the evacuation of flood victims as requested by the Civil Administration. **Support to Local Authorities:** Aid local authorities in emergency relief operations such as search and rescue, setting up evacuation centers, distributing food to the displaced, and providing health services. **Emergency Response Mobilization:** Deploy emergency response teams from district, provincial, or national levels for effective crisis management **Data Collection Assistance:** Help gather data for damage and needs assessments.

Decapartment	Major/ Specific Tasks
Volunteer Network	**Evacuation and Rescue Operations:** The Civil Defence office facilitates the evacuation of people and their properties from disaster-affected areas, employing a large cadre of volunteers known as "Razakars." These volunteers are instrumental in search, rescue, evacuation, and the distribution of relief goods. **Volunteer Training and Collaboration:** Razakars, who are trained in swimming, basic rescue techniques, and first aid, enhance their skills through simulation and mock exercises. The Civil Defence collaborates with Punjab Emergency Services (Rescue 1122) for more complex rescue operations. **Mobilization of Razakars:** Organized into mobile squads in partnership with local wardens and scouting organizations, Razakars assist the local administration, the army, and Rescue 1122 in various disaster response activities. **Specialized Equipment and Skills:** Razakars operate generators, searchlights, and lifesaving equipment, and those skilled in swimming and diving engage in specialized water rescues. **Medical and Emergency Support:** Razakars provide first aid to injured individuals before hospital transport and support the fire brigade and health department in rescue and medical treatments. **Information System Assistance:** The Civil Defence aids the District Administration and Police in establishing an information system to help the public locate missing relatives and friends during disasters.

NOTE: For details roles and responsibilities of various organizations in respective districts, kindly refer to DDMPs of concerned District, available at PDMA and respective DDMAs.

CHAPTER 8
LOGISTICS AND EMERGENCY SUPPLY CHAIN MANAGEMENT

8.1 HUMANITARIAN WAREHOUSES

In an effort to enhance logistical preparedness and emergency response capacity across Punjab, the PDMA, Punjab has prioritized the establishment and operationalization of humanitarian warehouses at strategic locations (Figure 50). These warehouses serve as critical nodes in PDMA's disaster response framework, enabling the rapid deployment of life-saving supplies during disasters such as flood, heatwaves, and climate-related emergencies.

PDMA currently have two HRF (4400 MT & 3200 MT) at Lahore and Muzaffargarh constructed by UN World Food Program (WFP) in 2016. These facilities have been instrumental in storing and dispatching essential supplies including tents, food packs, medical kits, and rescue equipment during monsoon-related emergencies (Annexure-I). In light of recent monsoon experiences and growing logistical needs, PDMA has initiated the expansion of its warehousing infrastructure to additional high-risk districts Figure 48.

Provincial Cabinet in its 20th meeting held on 03.12.2024 approved the scheme for establishment 3 more warehouses (8000 sq.ft. approx.) at strategic locations (Sargodha, Jhang, Rajanpur) for Inclusion in ADP-2024-25 at the cost of 349.707 Million.

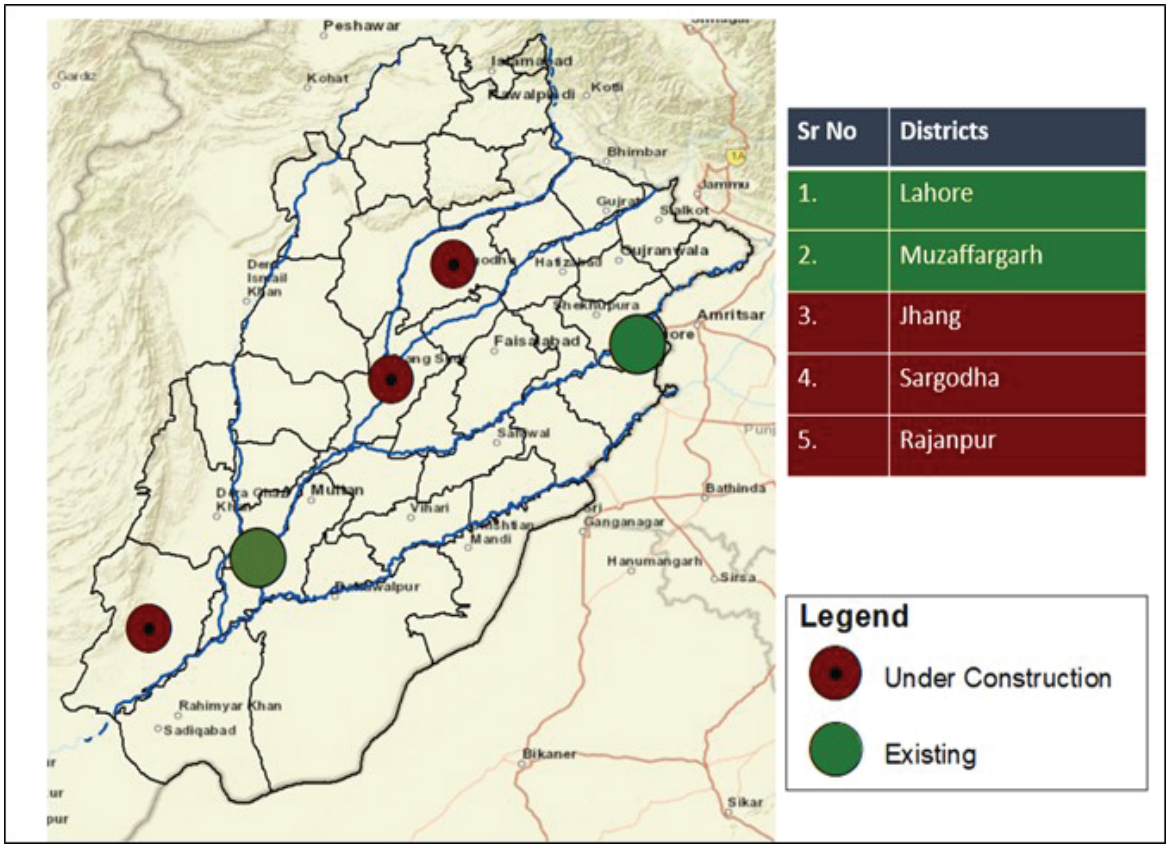


Figure 50 Location Information of Warehouses, PDMA

8.2 EXISTING WAREHOUSE: LAHORE AND MUZAFFARGARH

The Lahore warehouse functions as PDMA Punjab's primary central relief hub, strategically positioned for the storage, quality control, and dispatch of humanitarian relief items to districts in northern and central Punjab Figure 51. It serves as the core stockpile facility for high-volume supplies including:

- Tents, tarpaulins, and mosquito nets
- Hygiene kits and water purification tablets
- Non-perishable food items
- Life jackets and inflatable boats (for urban flooding and rescue ops)

Figure 51 Lahore Warehouse Visit & Inventory

The Muzaffargarh warehouse acts as a logistics hub for southern Punjab Figure 52, covering high-risk flood-prone districts such as D.G. Khan, Rajanpur, Layyah, and Rahim Yar Khan. It is critical for rapid deployment in the event of:

- Flash floods from hill torrents (e.g., Suleman Range)
- Riverine floods due to breaches or high discharge from Taunsa Barrage
- Emergency shelter and food security response

These warehouses form the backbone of PDMA's prepositioning and response strategy under the Monsoon Contingency Plan 2025, ensuring that life-saving aid is not only available but strategically placed to reach the most affected populations in the shortest possible time.

Figure 52: Muzafargarh Warehouse Visit & Inventory

8.3 SITE SELECTION OF UNDER CONSTRUCTED WAREHOUSES: SARGODHA, RAJANPUR, JHANG

To address logistical gaps and reduce response times in vulnerable and underserved regions, PDMA has approved the establishment of three new humanitarian warehouses in (Table 8:Attribute information of under constructed warehouses):

- Sargodha: Serving central Punjab and facilitating outreach to adjoining districts like Khushab, Bhakkar, and Mianwali (Figure 54 Site Selection Plan of Sargodha).
- Rajanpur: Strategically located to support response operations in flood-prone southern districts, particularly those affected by hill torrents (Figure 55 Site Selection Plan for Rajanpur).
- Jhang: Positioned to strengthen emergency logistics in central-western Punjab, with high accessibility to Faisalabad, Chiniot, and Toba Tek Singh (Figure 53 Site Selection Plan of Jhang).

These locations were identified based on vulnerability mapping, risk exposure, population density, and logistical accessibility. The upcoming facilities are being designed to meet international humanitarian standards for disaster storage and will be integrated with PDMA's early warning and relief activation systems.

Table 8:Attribute information of under constructed warehouses

Sr.	District	Location	Area
1.	Sargodha	(Khewat No 1350, khatooni No. 1356, Khasra No 292/166/3, Mouza Chak Number 45 Alif Shumali)	08 Kanal
2.	Jhang	(635 Min, Near Lala Zaar Housing Society, Chak Ghumman, Toba Road)	08 Kanal
3.	Rajanpur	(Khata No-081, Khasara No 58/1, 58/2/1 Mouza Rajanpur No-I)	10 Kanal

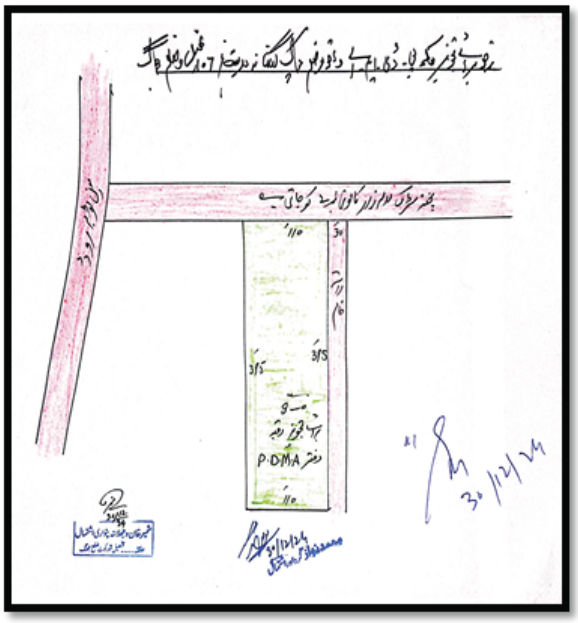
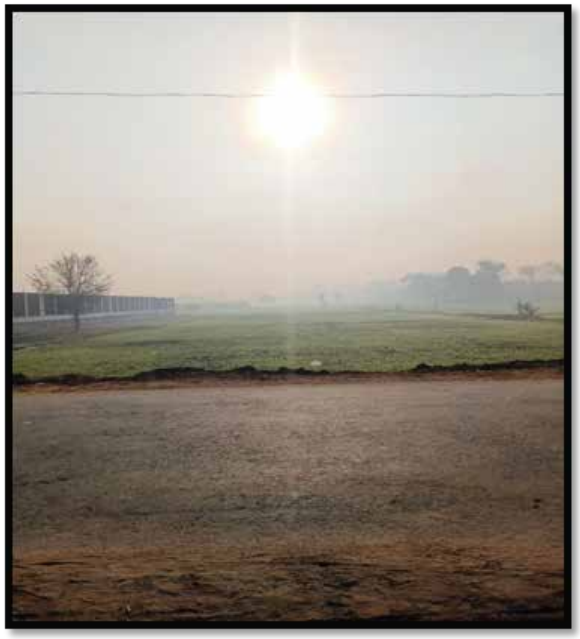


Figure 53 Site Selection Plan of Jhang



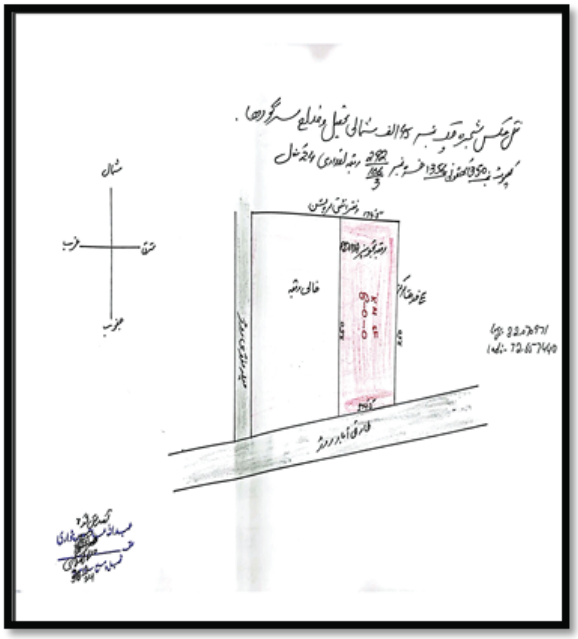


Figure 54 Site Selection Plan of Sargodha

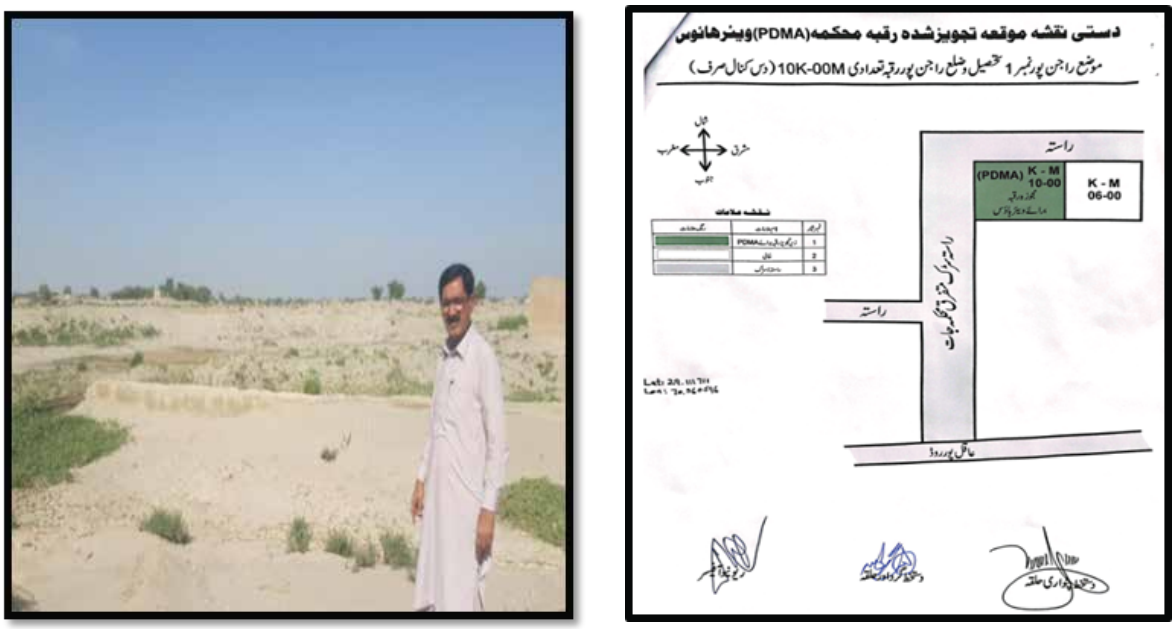


Figure 55 Site Selection Plan for Rajanpur

CHAPTER 9
POST FLOOD RESPONSE, RELIEF & REHABILITATION PLAN

9.1 COORDINATED RESCUE AND EVACUATION OPERATIONS

An immediate, well-coordinated evacuation from disaster-impacted regions is crucial to reducing the pressure on subsequent rescue efforts. In the aftermath of any calamity, rescue, relief, and rehabilitation operations are initiated in tandem. To facilitate timely response, the PDMA Punjab has established an Integrated Early Warning System (IEWS). This system leverages satellite-based connectivity with the PMD and DEOCs, consolidating critical data onto a unified platform. The system, stationed at PDMA's headquarters, provides real-time flood updates to the PEOC, which then disseminates the information to respective DEOCs.

At the community level, early evacuation warnings are communicated through multiple channels sirens, mosque loudspeakers, and television announcements. Additionally, PDMA employs digital communication, including voice and SMS alerts, to ensure widespread dissemination of early warnings. In cases of extreme flooding, the Pakistan Army is mobilized as a reserve force to support local evacuation and rescue efforts.

Evacuation directives are issued by PDMA Punjab and enforced by the respective Deputy Commissioners (DCs) based on ground realities.

The protocol begins with the critically injured and bedridden, followed by persons with disabilities, pregnant women, the elderly, children, and women. A color-tagging system expedites the evacuation of those requiring urgent medical care. District Management Plans comprehensively outline the locations of relief camps, assigned personnel, institutional responsibilities, and available healthcare infrastructure.

District administrations have identified and designated relief and evacuation centers, ensuring PDMA Punjab has full access to this information for coordinated disaster management planning.

9.2 PROVISION OF HEALTHCARE SERVICES

The core objective of healthcare provision in relief camps is to proactively prevent and control the spread of infectious and communicable diseases post-disaster. This is achieved through close coordination among PDMA, DDMAs, and District Health Authorities, supported by regular strategic meetings and data-sharing on emerging health threats.

District Health Authorities participate in flood simulation exercises and deploy mobile health units in high-risk areas. Historical data underscores the frequent outbreak of diseases such as gastroenteritis, diarrhea, scabies, skin infections, malaria, and snake bites in post-flood environments.

To mitigate health risks, PDMA has established the following directives for all DDMAs in managing relief camp healthcare services:

- Immediate deployment of mobile clinics in affected zones.
- District Health Authorities shall lead medical response efforts, in coordination with PDMA, DDMAs, and the Provincial Health Department.
- Partnerships with national and international NGOs (I/NGOs) may be initiated to enhance service delivery.
- Accurate and timely patient recordkeeping is mandatory to detect early signs of disease outbreaks and for ongoing monitoring.
- Relief camps must include dedicated services for orphans, persons with disabilities, vulnerable women, and other marginalized groups.

- Pre-disease surveillance systems must be activated to track cholera, typhoid, malaria, and other potential epidemics.
- The operational readiness of all nearby public and private healthcare facilities must be assessed by District Administrations.

Moreover, DDMA works in close alignment with the Livestock and Dairy Development Department to protect rural livelihoods by ensuring healthcare and nutrition services for livestock. The department is responsible for:

- Assisting in the rescue of livestock and ensuring the availability of dry fodder and adequate feed supplies.
- Providing curative and preventative vaccinations, parasite control, and treatment for injured or ill animals.
- Maintaining proper inventories of veterinary medicines and vaccines.

9.3 PRE-IDENTIFIED RELIEF CAMP SITES

Each District Disaster Management Authority (DDMA) has identified suitable sites for the establishment of relief camps, as outlined in their respective District Disaster Management Plans. These sites are strategically located in proximity to vulnerable populations while ensuring safety from primary and secondary hazards (Figure 56). Furthermore, these relief sites are equipped with medical doctors, paramedical staff, and essential relief equipment to ensure timely and effective humanitarian assistance. The selection process prioritizes accessibility, security, and the availability of essential utilities and services to adequately support displaced communities

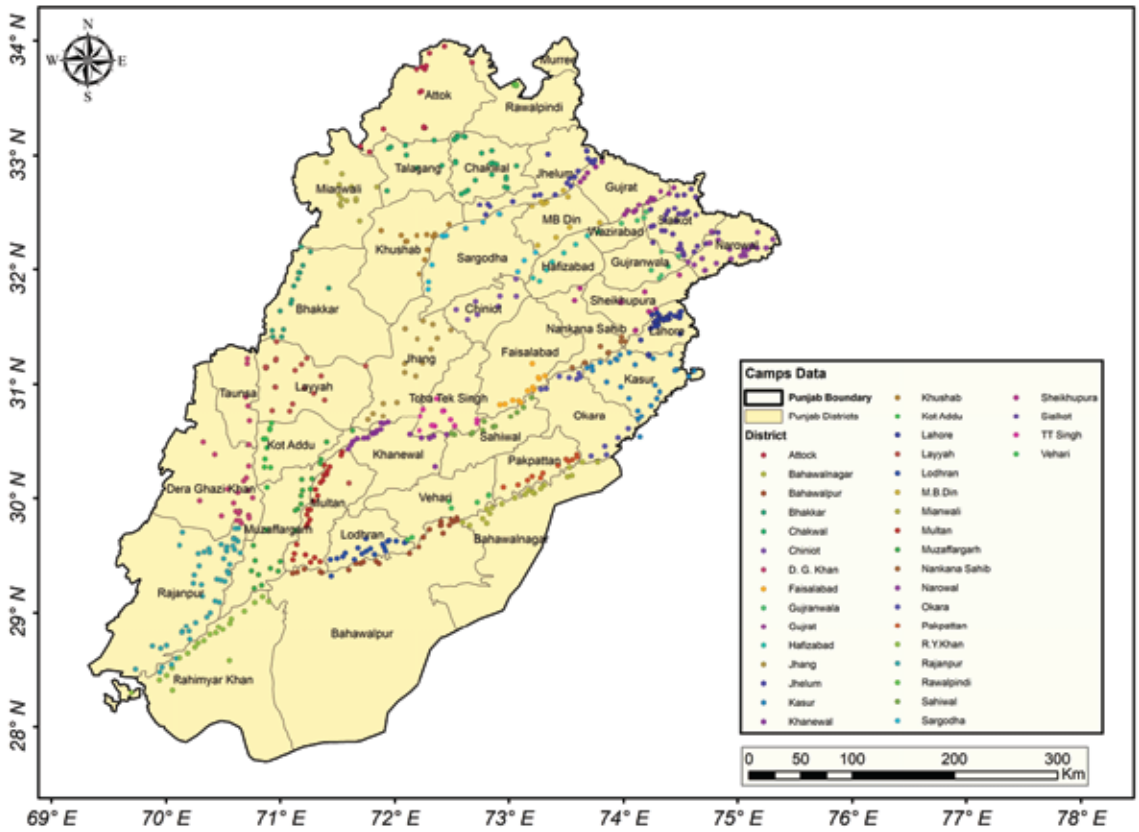


Figure 56: Establishment of Relief Camps in flood prone areas

9.4 DISASTER RISK FINANCING MECHANISMS

Following three major flood events since 2010, the Government of Punjab has strengthened its disaster risk financing mechanisms to support effective relief and rehabilitation. Several cash assistance programs have been launched, including:

Table 9 Cash Assisstance Programme (2010 - 2024)

Sr.	Program Name	Year	Beneficiaries	Amount (PKR Billion)
1	Watan Card Program	2010	622,092	12.441
2	Citizens Damage Compensation Program	2010	345,859	13.801
3	Khadim-e-Ala Relief Card	2012	38,196	0.764
4	Khadim-e-Punjab Imdadi Package (KPIP)	2014	349,344	14.110
5	Financial Assistance Program for IDPs of North Waziristan	2014	93,000	0.659
6	Prime Minister Kisan Package	2015	1,100,000	25.000
7	Prime Minister's Relief Fund	2022	56,512	9.900
	Total		2,605,003	76.67

Rehabilitation is prioritized through the restoration of critical infrastructure such as roads, bridges, electricity, schools, and health facilities. PDMA coordinates with the Communication & Works Department and other relevant agencies to expedite damage assessments and infrastructure reconstruction. Law enforcement agencies maintain security and prevent child labor and exploitation, with the Social Welfare Department and specialized NGOs addressing vulnerable population needs.

9.5 FORMATION OF DISTRICT COMPENSATION COMMITTEES

The Senior Member Board of Revenue (SMBR) has mandated the formation of District Committees to oversee claims related to casualties and compensation. These committees are led by the Deputy Commissioner and include the Mayor/Chairperson of the local government, CEO of the District Health Authority, Assistant Commissioner of the affected Tehsil, and Rescue 1122 representatives.

A compensation policy (Annexure III & Annexure IV) has been formalized, establishing clear eligibility criteria and payment amounts for loss of life, injuries, property damage, and livestock loss, ensuring transparency and equity in disaster relief.

9.6 SAFE REPATRIATION OF DISPLACED POPULATIONS

Ensuring the dignified and safe return of displaced populations is a key priority for DDMAs. In close coordination with PDMA and PMD, safe return routes are identified and communicated. Community Emergency Response Teams, trained volunteers, Civil Defence, Transport Department, and humanitarian partners including I/NGOs facilitate the repatriation process. Efforts are made to ensure that returnees have access to essential services, psychosocial support, and protection mechanisms throughout the transition period.

ANNEXURES

PROVINCIAL DISASTER MANAGEMENT AUTHORITY
PUNJAB

ANNEXURE I: RESCUE AND RELIEF EQUIPMENT INVENTORY, 2025

Items	With DDMAs	LHR HRF	M.Garh HRF	Pak Army	Total
OBMs	767	64	1	665	1497
Boats	719	58	5	979	1761
De-watering sets	1043	44	8	166	1261
Life Jackets	11463	1518	12	9553	22546
Life Rings	3605	103	85	657	4450
Blankets	4225	10331	1600	-	16156
Tents	11186	6757	3760	129	21703
Plastic Mats	11615	5766	2500	-	19881
Mosquito Nets	14867	1500	2500	-	18867

ANNEXURE II: CONSTITUTION OF CABINET COMMITTEE ON DISASTER MANAGEMENT

GOVERNMENT OF THE PUNJAB
SERVICES & GENERAL ADMINISTRATION DEPARTMENT
(CABINET WING)
Dated Lahore, the 09th July, 2024

No.SO(CAB-II)8-6/2024: In pursuance of the decision of the Provincial Cabinet made in its meeting dated 25.06.2024, the **Cabinet Committee for All Infectious Diseases Including Dengue and Disaster Management** is hereby re-notified with the following composition:

1.	Minister for Specialized Healthcare & Medical Education Department	**Chairperson**
2.	Minister for Primary & Secondary Healthcare Department	**Co-Chair**
3.	Minister for Finance	Member
4.	Minister for School Education	Member
5.	Additional Chief Secretary, S&GAD	Member
6.	Senior Member Board of Revenue / Relief Commissioner	Member
7.	Secretary, Primary & Secondary Healthcare Department	Secretary
8.	Secretary, Specialized Healthcare & Medical Education Department	Member
9.	Inspector General of Police, Punjab	Member
10.	Secretary Finance Department	Member
11.	Secretary P&D Department	Member
12.	Secretary C&W Department	Member
13.	Secretary Irrigation Department	Member
14.	Secretary Agriculture Department	Member
15.	Secretary L&DD Department	Member
16.	Secretary LG&CD Department	Member
17.	Secretary HUD&PHE Department	Member
18.	Director General, Rescue 1122	Member
19.	Any member(s) to be co-opted by the committee	Member

09-07-24

Terms of References (TORs):

i. The Committee shall oversight the preparation for all infectious diseases, including dengue, and disasters.
ii. The Committee shall hold meetings on regular basis.
iii. The Committee shall ensure coordination among all relevant departments during natural disasters and epidemics.
iv. Scrutinize and recommend the schemes with cost estimates under approved "Policy for flood protection works of emergent nature inside the flood plains due to erosive action of river to protect local abadies/

agriculture land/ gardens, etc. where no Irrigation Infrastructure is under threat".

v. Review all stages of Disaster Management Spectrum Including Risk Assessment, Prevention & Mitigation, Awareness & Capacity Building, Preparedness, Early Warning, Rescue, Relief, Recovery, Rehabilitation and Reconstruction for all potential disasters in Punjab;

vi. Review all Acts, Rules and Standing Instructions for provision of relief/ compensation to the calamity/ disaster affectees

vii. The Committee shall ensure that all arrangements are made and implemented smoothly.

2. Primary & Secondary Healthcare Department, Government of the Punjab shall provide secretarial and logistic support to the Committee in All Infectious Diseases related meetings.

3. Director General, Provincial Disaster Management Authority will act as Secretary to the Committee to the extent of meetings related to disaster management. Furthermore, PDMA shall provide secretarial and logistic support to the Committee in Disaster Management related meetings.

ZAHID AKHTAR ZAMAN
CHIEF SECRETARY

No. & DATE EVEN:

A copy is forwarded for information and necessary action to:

1. All the Provincial Ministers, Punjab
2. All the Members of the Cabinet Committee for All Infectious Diseases Including Dengue and Disaster Management
3. The Senior Member, Board of Revenue, Punjab
4. The Chairman, Planning & Development Board, Punjab
5. All the Administrative Secretaries, Govt. of the Punjab
6. The Director General, Provincial Disaster Management Authority, Lahore
7. The Additional Chief Secretary, Punjab
8. The Principal Secretary to Chief Minister, Punjab
9. All the Divisional Commissioners, in the Punjab
10. The Provincial Police Officer, Punjab
11. The Chairman, Chief Minister's Inspection Team, Punjab
12. The Additional Secretary (Gen.)/Staff Officer to Chief Secretary, Punjab
13. The Section Officer (I&C-I), S&GAD
14. P.S.O to Chief Secretary, Punjab
15. P.S to Secretary (I&C), S&GAD

Ali Jan 09-07-24

(IMRAN ALI)
SECTION OFFICER (CABINET-II)

ANNEXURE III: NEW POLICY FOR CASUALITIES/DEATH COMPENSATION

BOARD OF REVENUE, PUNJAB
PROVINCIAL DISASTER MANAGEMENT AUTHORITY
40-A Lawrence Road, Lahore
Lahore, dated 4th October 2022

NOTIFICATION

No DC(38)-2022/CR-V 4/11 In continuation of previous instructions circulated vide letter No 513-2017/631/CR-I, dated 08-07-2017, on the subject and in pursuance of the Cabinet Committee meeting held on 09.09.2022, the Government of the Punjab has been pleased to revise the compensation rates to be given to the affectees of natural calamities in the province of Punjab, which are produced below for information and guidance for taking up the cases for grant of compensation with effect from 15.08.2022:-

i)	**Loss of Life**	
	For each person died due to natural calamity irrespective of the No. of causalities in a family	Rs.1,000,000/-
ii)	**Injured Persons**	
	(a) Permanent Disability	Rs.300,000/-
	(b) critical injury	Rs.100,000/-
	(c) Minor injury	Rs. 40,000/-
iii)	**Damage to House:**	
	(a) Fully (Pacca)	Rs.400,000/-
	(b) Partially (Pacca)	Rs.200,000/-
	(c) Fully (Kacha)	Rs.200,000/-
	(d) Partially (Kacha)	Rs. 50,000/-
iv)	**Loss of Cattle Heads.**	
	Loss of Cattle Head (Milch and Draught Animal)	Rs. 75,000/-
	Loss of Cattle Head (Sheep and Goat)	Rs. 5,000/-

INSTRUCTIONS FOR COMPENSATION AGAINST LOSS OF LIFE

1. Compensation of the deceased persons shall be paid to the family head.
2. If the family head himself is dead, compensation shall be paid to the Legal Heir(s) as per their shares as per law.
3. If all the members of family are dead due to the disaster/calamity, a lump sum compensation amount of Rs. 1,000,000/- (One Million) shall be paid to the Next of Kin (NOK).

INSTRUCTIONS FOR DAMAGED HOUSE

(1) "Katcha House" means a dwelling place or residential unit made with the material other than bricks / concrete blocks but with mud, bamboo, straw, wood, stones or dry leaves etc.
(2) "Pakka House" means a dwelling place or residential unit made with bricks or concrete blocks etc.

2. Definitions/instructions for assessing claims viz a viz complete and partial katcha house damage shall remain the same as already laid down in the subject document.

INSTRUCTIONS FOR COMPENSATION AGAINST LOSS OF LIVESTOCK

1. Attested copy of CNIC of the owner or 'Form B' (in case the owner is minor) shall be required for the purpose of compensation.
2. The number of cattle/animals died as a result of the disaster shall be attested by the concerned UC Secretary/elder of the concerned tribe and the same shall be verified by the concerned Livestock Officer and countersigned by the Assistant Commissioner/Assistant Political Agent concerned.

(ZAHID AKHTAR ZAMAN)
SMBR/RELIEF COMMISSIONER,
PUNJAB

Even No. & Date

A copy is forwarded for information and similar necessary action to:

1. All the Commissioners of Divisions in the Punjab.
2. All the Deputy Commissioners in the Punjab.

(ZAHID AKHTAR ZAMAN)
SMBR/RELIEF COMMISSIONER,
PUNJAB

Even No. & Date

A copy is forwarded for information to:-

1. Raja Basharat, Cabinet Committee on Disaster, Minister for Corporative Punjab Lahore,
2. Chief Secretary, Punjab, /Voice Chairman Cabinet Committee on Disaster, Punjab, Lahore.
3. Secretary to Chief Minister Punjab, Lahore.
4. All Administrative Secretaries in the Punjab.

Sd/-
(ZAHID AKHTAR ZAMAN)
SMBR/RELIEF COMMISSIONER,
PUNJAB

ANNEXURE IV: OLD POLICY FOR CAUSALITIES/DEATH COMPENSATION

P D M A

Phone No.99210730-31

No. 513 -2017/ 631 /CR-I
GOVERNMENT OF THE PUNJAB
DISASTER MANAGEMENT
DEPARTMENT/PDMA
40-A, LAWRENCE ROAD
Lahore dated the 8th July, 2017

To

All the Deputy Commissioners in the Punjab.

Subject:- **COMPENSATION TO BE GIVEN TO THE AFFECTEES OF NATURAL CALAMITIES.**

In supersession of all previous instructions on the subject, in pursuance of the Cabinet Committee meeting held on 29-6-2017, Chief Minister, Punjab has been pleased to revise the compensation rates to be given to the affectees of natural calamities in the province of Punjab, which are produced below for information and guidance for taking up the cases for grant of compensation with immediate effect except for loss of life which is w.e.f. 7th June, 2017:-

i)	**Loss of Life** For each person died due to natural calamity irrespective of the No. of causalities in a family	Rs 800,000/-
ii)	**Injured Persons**	
	(a) Critical serious injury (Permanent) Disability or loss of limbs)	Rs.300,000/-
	(b) Serious/critical injury	Rs.100,000/-
	(c) Minor injured	Rs. 40,000/-
iii)	**Damage to House:**	
	a) House Completely Damaged/Destroyed	Rs.100,000/-
	b) House partially damaged (depending upon the extent of damage)	Rs. 40,000/-
iv)	**Loss of Cattle Heads.** Loss of Cattle Head (Milch and Drought Animal Except Sheep and Goat)	Rs. 20,000/-

2. Definitions for assessing claims and awarding compensation viz a viz Complete and Partial house damage and Minutes circulated to all Deputy Commissioners in the Punjab vide letter No.239-2017/421/CR-I, dated 17th May, 2017:

COMPLETELY DAMAGED HOUSE.

(1) **For Single Room House / Unit:**
One or more (walls or roof) collapsed or are damaged to such an extent that the structure requires reconstruction of entire residential house.

(2) **For Houses having more than One Room:**

If a house comprises of more than one room, and more than one room is affected (either wall or roof or both) collapsed or damaged to an extent that it is not in a livable condition.

PARTIALLY DAMAGED HOUSE

(1) **For Single Room House / Unit:**

Roof of a residential house is in place and walls are damaged upto an extent of repair.

(2) **For Houses having more than One Room:**

If a house comprises of more than one room and only one room (either wall or roof or both) is collapsed or damaged, it will be considered as partially damaged.

GENERAL GUIDELINES:

1. If a house is shared with different brothers or family member(s) then, each will be considered as separate units, in case the incumbent is a separate head of family having different NADRA Family Number.
2. Any boundary wall, livestock shed, out-door toilets would not be considered part of the residential house.
3. The following District Committee will carry out survey in a transparent manner for assessment of completely/partially damaged houses:-

   i) ADC (Revenue) — Convenor
   ii) Tehsildar / N Tehsildar (concerned) — Member
   iii) Deputy Director Agriculture (Extension) — Member
   iv) SDO Buildings (concerned) — Member
   v) Any other member co-opted by Deputy Commissioner

4. Bio Metric verification will be necessary for identification of the claimant before payment through NADRA.
5. Compensation will be paid only to the Head of the family after verification by District Administration.
6. House built/damaged in the River Bed Area would not be considered for compensation.

INSTRUCTIONS FOR PAYMENT OF COMPENSATION TO THE INJURED PERSONS.

a) **INJURED PERSON (PERMANENT DISABILITY).** A person is permanently and totally disabled if he or she cannot engage in any substantial gainful activity because of a physical or mental level condition. A physician determines that the condition has been lasted or can be expected to last continuously for at least a year or can lead to death , it means that because of a sickness or injury a person is unable to work in their own or any occupation for which they are suited by training education or experience.

b) **CRITICAL INJURED PATIENTS:-** Critically injured means an injury of a serious nature that -

   a) Places life in jeopardy.
   b) Produces unconsciousness
   c) Results in substantial loss of blood
   d) Involves the amputation of a leg or arm but not a finger or toe.
   e) Involves the amputation of a leg, arm, hand or foot but not a finger or toe.
   f) Consists of burns to a major portion of the body, or
   g) Causes the loss of sight in any eye

c) **MINOR INJURY:-** A minor injury is defined as a sprain, strain, whiplash associated disorder, contusion, abrasion, laceration or subluxation and any clinically associated sequelae.

It was further decided that "Any injury needing hospital admission with the categorization Hospital admission by Medical Board and medical treatment of the injured persons due to natural calamity will be carried out in any Government Hospital free of cost till complete recovery on the recommendation of Medical Board."

3. It is, therefore, requested to please ensure that the above mentioned rates are followed in making recommendations for disbursement of compensation to the affectees of natural calamities. The procedure for disbursement of compensation will continue as per instructions/practice.

(DR. MUHAMMAD SAQIB AZIZ)
SMBR/RELIEF COMMISSIONER,
PUNJAB.

Even No. & Date

A copy is forwarded for information and similar necessary action to all the Commissioners of Divisions in the Punjab.

(DR. MUHAMMAD SAQIB AZIZ)
SMBR/RELIEF COMMISSIONER,
PUNJAB.

Even No. & Date

A copy is forwarded for information to:-

1. Malik Nadeem Kamran, Chairman, Cabinet Committee on Floods/Minister for P&D, Punjab, Lahore.
2. Mehr Ejaz Ahmed Achiana, Vice Chairman, Cabinet Committee on Floods/Minister for Disaster Management, Punjab, Lahore.
3. The Chief Secretary, Punjab, Lahore.
4. The Secretary to Chief Minister, Punjab, Lahore.
5. All administrative Secretaries in the Punjab.
6. All Divisional Commissioners in the Punjab

(DR. MUHAMMAD SAQIB AZIZ)
SMBR/RELIEF COMMISSIONER,
PUNJAB.

ANNEXURE IV: PRE-FLOOD ARRANGEMENTS FOR MONSOON-2025

No. PRE-FLOOD-2025/OP-I/137
BOARD OF REVENUE, PUNJAB
PROVINCIAL DISASTER MANAGEMENT AUTHORITY
152-B, New Muslim Town,
Lahore, dated 13th March 2025.

To:

The Secretary,
Irrigation Department,
Government of the Punjab,
Lahore.

Subject: **PRE-FLOOD PREPAREDNESS AND CONTINGENCY PLANNING FOR MONSOON 2025**

Please refer to this department's letter No. PRE-FLOOD-2025/OP-I/115 dated 20.02.2025, on the subject sited above.

2. As climate change intensifies, Punjab is increasingly vulnerable to erratic monsoons and extreme weather events, necessitating robust and proactive flood preparedness. Under the National Disaster Management Act, 2010, it is imperative that all departments take comprehensive preemptive measures to minimize potential damage, protect critical infrastructure, and ensure timely response and recovery efforts.

3. To strengthen resilience against flooding, your department is requested to review and implement the following key actions before June 1, 2025:

i. Assess vulnerabilities and enhance infrastructure to withstand extreme weather, ensuring flood protection for storage facilities, transportation networks, and essential service points.
ii. Identify and secure high-ground locations for stockpiling essential commodities, emergency supplies, and response equipment.
iii. Launch targeted public awareness campaigns focusing on early warning dissemination, emergency response protocols, and safety measures for at-risk populations.
iv. Establish seamless communication channels among all stakeholders to ensure a unified response to flood-related emergencies.

4. Additionally, your department is requested to submit a comprehensive **Monsoon Contingency Plan by March 20, 2025**, covering following points:

i. Direct and supervise flood prevention measures and bunds protection activities, such as strengthening, maintenance, repair and construction of additional embankments and levies etc.;
ii. Operationalize gauge stations and provision of information and data to the authorities concerned for issuance of Alert and Danger Warning messages;
iii. Coordinate survey and investigation of the extent of damage to bunds, embankments canals and irrigation tube-wells at the appropriate time;
iv. Assist and coordinate emergency repair of public services and their timely restoration;

v. Supervise and coordinate actions to save stocks, equipment machinery etc. from damage;
vi. Inspect breaching sections to check the position and condition of the liners to ensure that the liners are ready to receive the charges when required;
vii. Review operating instructions for breaching sections and revision of critical levels to control the breaching sections;
viii. Review the plan for regulation of water supply;
ix. Carry out final survey and inspection of flood protection works;
x. Timely provision of funds to the Army for replenishment of stores;
xi. Prepare an inventory of equipment and material with locations for each head-work and flood protection structure.
xii. Organize and set up the Flood Emergency Cell within the Department;
xiii. Nominate officers for the Provincial Flood Warning Centre by 1st June, 2025;
xiv. Issue orders that gauge station operators will reside at site from 15th June to 15th October, 2025;
xv. Placement of the requisite machinery and material at safe locations near the vulnerable points for emergency repairs.
xvi. Preparation of inventory of flood relief equipment available.
xvii. Devise the mechanism to hold mock exercise/drills for handling the future flood related disaster keeping in view the worst case scenarios;
xviii. Identification of the potential areas and the sites to conduct the proposed drills/mock exercise;
xix. Update the existing flood fighting plans optimizing the available resources to meet any eventuality due to the ensuing flood/heavy rains. The plans must be comprehensive.

5. This plan will be reviewed during the Pre-Flood Arrangements Meeting in the first week of May 2025. Furthermore, it should be uploaded to your departmental website to facilitate public awareness and inter-agency coordination.

6. Given the increasing frequency and severity of climate-induced disasters, urgent and coordinated action is essential. Your cooperation in implementing these measures will play a crucial role in safeguarding lives and infrastructure during the upcoming monsoon season.

10th March, 202

DIRECTOR GENERAL
PROVINCIAL DISASTER MANAGEMENT AUTHORITY

CC:
1. SMBR/Relief Commissioner, Punjab, Lahore.
2. Secretary to Chief Minister, Punjab, Lahore.
3. Additional Secretary (staff) to Chief Secretary, Punjab, Lahore.

ANNEXURE V: PRE-FLOOD ARRANGEMENTS FOR MONSOON-2025

No. Flood-Prep/2025/ - 305
BOARD OF REVENUE, PUNJAB
PROVINCIAL DISASTER MANAGEMENT AUTHORITY
152-B, Noon Avenue, New Muslim Town,
Lahore, dated the 13th March , 2025

PHONE NO.99232157

All Deputy Commissioners/Chairman,
District Disaster Management Authorities (DDMAs)
in the Punjab.

Subject: **INCLUSION OF PREGNANT WOMEN, LACTATING MOTHERS, NEONATES, AND PERSONS WITH DISABILITIES IN THE CONTINGENCY PLAN 2025**

In continuation of this Department's letter No. **Flood Prep-2025/106/OP-I** dated **20.02.2025.**

2. Punjab Disaster Management Authority (PDMA) Punjab is committed to ensuring the safety, care, and support to marginalized groups, particularly **pregnant women**, **lactating mothers**, **neonates**, and **persons with disabilities**, as they are among the most vulnerable during floods and other disasters. These people face heightened risks, including health complications, malnutrition, limited mobility, and increased susceptibility to disease and psychological distress.

3. To enhance disaster preparedness and response mechanisms, a data-driven approach is being adopted to enable better planning, improved resource allocation, and timely interventions aimed at mitigating the impact of disasters on these vulnerable groups. Accurate and up-to-date data is essential to ensure the inclusion of vulnerable groups in the Contingency Plan 2025, facilitating a well-coordinated and effective response during emergencies.

3. In this regards, three (03) templates have been devised and attached at (Annex- A). Moreover, these templates are also shared via google form (https://shorturl.at/M5ZFO) which may please be filled out and shared with PDMA by 30th March, 2025.

4. Further, a revised standardized DDMP (District Contingency Plan) by incorporating these three templates has also been shared via link (https://shorturl.at/elnvU) for your reference.

DIRECTOR OPERATIONS
PROVINCIAL DISASTER MANAGEMENT AUTHORITY

CC:
1. SMBR/ Relief Commissioner, Punjab.
2. All Commissioners of Divisions in the Punjab.
3. Director General, PDMA, Punjab.
4. Assistant Director (Procurement), PDMA, Punjab.

No. PRE-FLOOD-2025/CR-I/ 018
BOARD OF REVENUE, PUNJAB
PROVINCIAL DISASTER MANAGEMENT AUTHORITY
152-B, New Muslim Town, Lahore
Lahore, dated 6Th **February** 2025.

MOST IMPORTANT
MONSOON 2025

To

All Deputy Commissioners/Chairpersons,
District Disaster Management Authorities in the Punjab.

Subject: **PRE-FLOOD ARRANGEMENTS FOR MONSOON – 2025**

In accordance with the National Disaster Management Act, 2010, it is imperative that we undertake comprehensive preventive and preparatory measures to safeguard lives, properties, vital infrastructure, installations, machinery, and equipment from the potential impacts of heavy rains and floods. Effective planning and coordination among all concerned departments and agencies will significantly reduce the vulnerability of our communities to these hazards. Kindly implement the followings prior to the commencement of the rainy/flood season on **01 June 2025**:

1. Preparedness and Coordination

i. **District Disaster Management Authority Meetings:**
   a. Convene meetings to review and refine preparedness plans, ensuring all loose ends are addressed.
   b. The initial meeting should be held by the end of April 2025, with a follow-up in early May 2025.

ii. **Flood Protection and Infrastructure:**
   a. Inspect and repair all Flood Protection Bunds under the supervision of the concerned departments.
   b. Establish a transparent monitoring mechanism for flood water management and infrastructure.

iii. **De-Watering Pumps:**
   a. Verify that all de-watering pumping sets (provided by Metropolitan Corporations, District Councils, Municipal Corporations, and Municipal Committees) are fully operational.
   b. Expedite the repair or replacement of any faulty equipment.

iv. **Flood Relief Equipment Inventory:**
   a. Prepare and maintain an updated inventory of all flood relief equipment available within your district.

v. **Private and Rescue Boats:**
   a. Conduct a survey to enlist all private boats for potential requisition during rescue and relief operations.

b. Ensure that Rescue-1122 boats are fully serviceable.

2. Mock Exercises and Drills to Ensure Operational Readiness of Flood Equipment

i. **Comprehensive Mock Exercise:**
   a. Conduct a comprehensive mock exercise during March 2025 to rigorously test the operational status of all flood relief equipment.

ii. **Thorough Inspection and Reporting:**
   b. Ensure that each unit, along with all accessories, is thoroughly inspected. Submit a detailed report outlining the findings, any deficiencies identified, and the corrective measures implemented to the PDMA.

3. Gender-Sensitive and Vulnerable Groups Provisions

ii. **Data Collection and Segregation:**
   a. Collect gender-based segregation data of vulnerable groups and incorporate this data into all flood contingency plans.
   b. Give special consideration to the care and protection of females, children, and other vulnerable populations.

iii. **Special Arrangements for Women and Children:**
   a. Develop dedicated plans for safe spaces and shelters specifically for women and children during evacuation and relief operations.
   b. Implement protocols to prevent and address any form of violence, abuse, or exploitation during flood events.

iv. **Gynecological and Maternity Support Services:**
   a. Ensure the availability of specialized gynecological services throughout the monsoon season.
   b. Establish a duty roster for qualified gynecologists, with designated shifts for obstetric emergencies.
   c. Secure an adequate stock of delivery kits and ensure that necessary support staff are available to manage gynecological or obstetric emergencies.

4. Health and Medical Readiness

i. **Medical Facility Preparedness:**
   a. Confirm that District Hospitals, THQs, RHCs, and BHUs are well-stocked with essential medicines and prepared for an increased emergency load.
   b. Integrate measures to manage water-borne diseases and other flood-related health emergencies.

ii. **Support for Vulnerable Populations:**
   a. Implement arrangements to assist stranded women, children, and other vulnerable groups, ensuring their needs are prioritized during rescue and relief operations.

5. Updated Flood Contingency Plans

i. **Plan Revision and Submission:**
   a. Update existing flood contingency plans, optimizing all available resources.

b. Ensure the plans include detailed instructions for the timely evacuation of populations from vulnerable areas using early-warning data, without exposing them to additional hazards.
c. Submit the revised contingency plans to this Department by **10 March 2025**.

ii. **24-Hour Operational Readiness:**
a. Appoint an Officer of BPS-17 or above at the Flood Warning & Control Centre/DEOC, who shall remain available round the clock after the receipt of a medium or higher-level flood warning.
b. Provide the name and contact details of the designated officer.

6. Reporting Mechanism

i. **Formation of a Coordinated Task Force:**
a. Establish a district-level Task Force in collaboration with Rescue-1122.
b. The Task Force should include representatives from WAPDA (Electricity), WASA (where applicable), Local Governments, Irrigation, Highways, Civil Defence, Buildings, Health, and Livestock Departments to ensure a coordinated and effective response.

ii. **Daily Reporting:**
a. Submit loss/damage reports on a daily basis to the Disaster Management Department/PDMA, Punjab, Lahore, throughout the flood season.

7. Public Dissemination

a. Ensure that all plans and updates are published on the official website of your office, so that the public and all stakeholders remain informed.

DIRECTOR OPERATIONS
PROVINCIAL DISASTER MANAGEMENT AUTHORITY

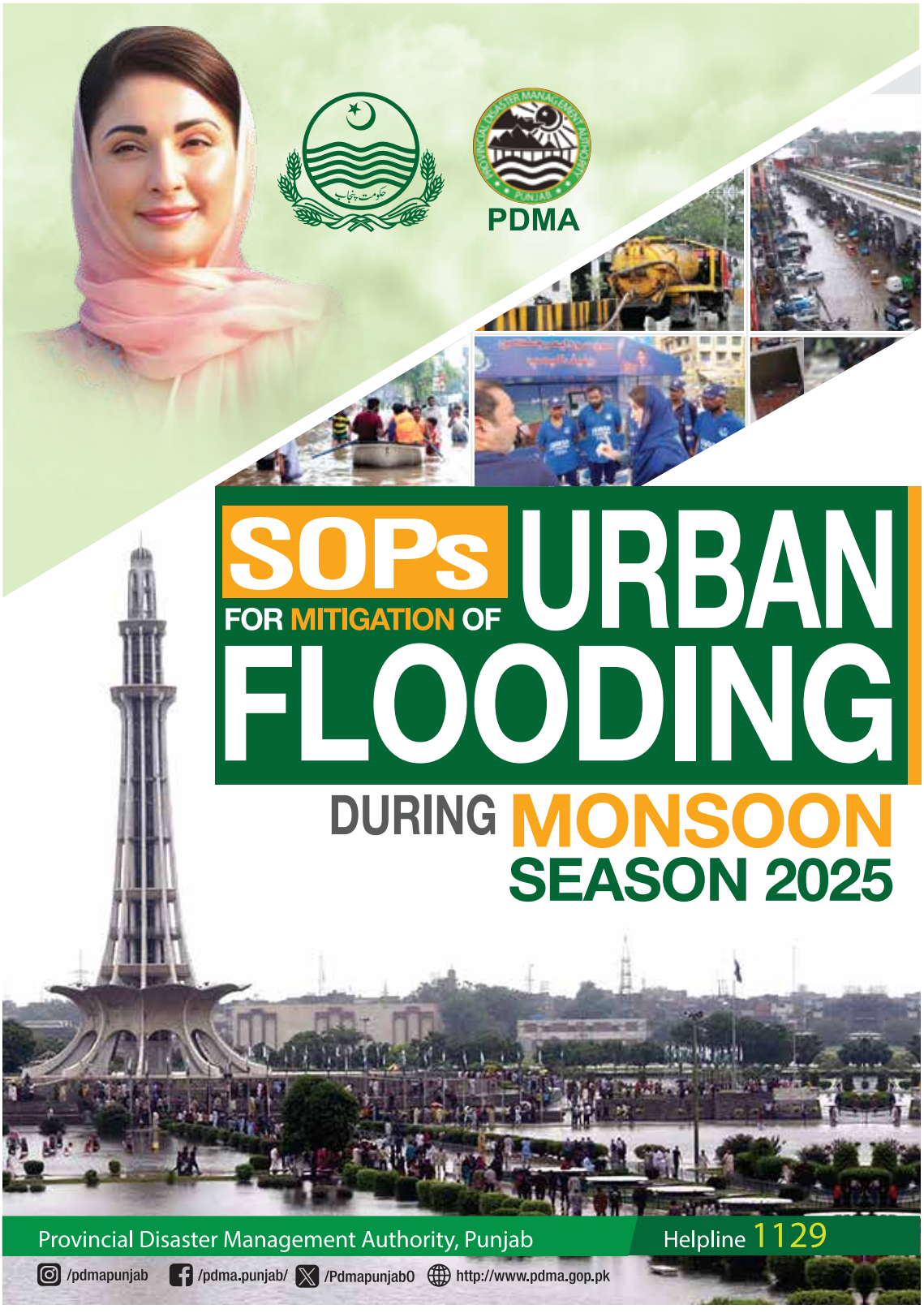
CC:

1. SMBR/Relief Commissioner, Punjab, Lahore.
2. Secretary to Chief Minister, Punjab, Lahore.
3. All Divisional Commissioners in Punjab
4. Additional Secretary to Chief Secretary, Punjab, Lahore.
5. PS to Chairman, NDMA, Islamabad.

ANNEXURE VI: SOPS FOR URBAN FLOODING

a) SOPs circulated to Departments Concerned (WASA, Housing & Urban Development, Local Government).

b) All WASAs & LGs have prepared Urban Flood Management Plans



Annexure VII: Important Contact Details

1. Commissioners Contact Information

COMMISSIONERS IN THE PUNJAB					
Sr. #	**Designation**	**Name / Address**	**Tele. Office**	**Tele. Residence**	**FAX NO.**
1	**Commissioner Bahawalpur**	Ms. Musarrat Jabeen	9250061-62	9250538, 0341-0922057	**9250073, 9250539**
	Code - 062	combwp@gmail.com			
2	**Commissioner, D.G. Khan**	Mr.Ishfaq Ahmad	9260467, 92466377	9260016, 0341-0922058	**9260469**
	Code - 064	commissioner.dgk@gmail.com			
3	**Commissioner, Faisalabad**	Ms. Marryam Khan	9201717-18	9201701-2, 0304-0920054	**9201703**
	Code - 041	commfsd@hotmail.com		9200165, 0321-6206303	**9201719**
4	**Commissioner Gujranwala**	Mr. Naveed Haider Shirazi,	9201326-27	0321-6206303, 0304-0920050	**9201329, 9200162**
	Code - 055				
5	**Commissioner Lahore**	Mr. Zaid Bin Maqsood	99214322	0321-4581555	**99214326**
	Code - 042		0321-4581555	0304-0920055	**99214334**
6	**Commissioner Multan**	Mr. Amir Kareem Khan	9200044	9330796, 0304-0920056	**9200971, 9330795**
	Code - 061	-			
7	**Commissioner, Rawalpindi**	Mr. Aamer Khattek	9292506-7		**9270687, 9292508**
	Code - 051				
8	**Commissioner, Sahiwal**	Mr. Shoaib Iqbal Syed	9200491	9200499, 0304-0920056	**9200492**
	Code - 040	commissionerswl@gmail.com			
9	**Commissioner Sargodha**	Mr. Muhammad Jahanzeb	9230721-22	9230699, 0304-0920053	**9230720**
	Code - 048	commissionersargodha@gmail.com			

2. Deputy Commissioners Contact Information

DEPUTY COMMISSIONERS IN THE PUNJAB							
Sr. #	Designation	Name / Address	Dist Code	Tele. Office	Tele. Residence	Personal No.	FAX NO.
1	Deputy Commissioner Bahwalpur	Mr. Farhan Farooq,		9250492, 9250069	9250063	0341-0922083	92504 93
2	D.C Bahawalnagar	Mr. Zulfiqar Ahmad	Code-063	9240201-202	9240201-3	0304-0920084	92402 04
3	D.C Rahim Yar Khan	Khummar Pervaz	Code-068	9230266	9230277-78	0304-0920085	92302 67
4	D.C Dera Ghazi Khan	Mr. Muhammad Usman Khalid,	Code-064	9260340	9260341	0321-6311616	92603 49
5	D.C Layyah	Ameera Baidar	Code-0606	920103-4	413705	0304-0920092	41378 8
6	Deputy Commissioner Muzaffargarh	Ms. Qurat-ul-Ain		9200251-52	9200254	0304-0920091	92002 53
7	Deputy Commissioner Rajanpur	Mr. Shafqat Ullah Mushtaq,		920001	920002	0304-0920093	92000 3
8	D.C Faisalabad	Capt. (Retd.) Nadeem Nasir,	Code-041	9200205	9200208-9	0300-0920078	92001 56
9	D.C Chiniot	Mr. Safi Ullah Khan	Code-047	047-9210111	9210105-6	0304-0920089	92101 10
10	Deputy Commissioner Jhang	Mr. Ali Akbar	Code-047	9200081	9200201	0304-0920080	92002 00
11	D.C T.T Singh	Mr. Muhammad Naeem	Code-0462	9201001	2510659	0304-0920079	92010 04
12	Deputy Commissioner Gujranwala	Mr. Naveed Ahmad	Code-055	9200051-52	9200024	0304-0920064	92000 43
13	D.C Gujrat	Mr. Safdar Hussain Virk	Code-053	9260009-10	9260011	0304-0920066	92600 09
14	D.C Hafizabad	Mr. Abdul Razzaq	Code-0547	0547-920113	521075	0304-0920069	52107 5
15	Deputy Commissioner Mandi Bahaudin	Mr. Muhammad Faisal Saleem,	Code-0546	504220	504200	0304-0920068	
16	D.C Narowal	Syed Hasan Raza,	Code-0542	920010	0542-920121-22	920121-22	92001 3
17	D.C Sialkot	Ms. Saba Asghar Ali	Code-052	9250451-54	9250454	0304-0920065	92504 53
18	Deputy Commissioner Lahore	Syed Musa Raza,	Code-042	9911003-4	99200201-2	0304-0920060	99211 006
19	Deputy Commissioner Kasur	Aurangzaib Haider Khan,	Code-049	9250143	9250067	0304-0920062	92501 62
20	Deputy Commissioner Nankana Sahib	Mr. Muhammad Tasleem Akhtar Rao	Code-056	920110	9201014	0304-0920059	92010 12
21	Deputy Commissioner Sheikhupurah	Mr. Shahid Imran Marth	Code-056	9260010	9260011	0304-0920061	92600 09
22	Deputy Commissioner Multan	Mr. Muhammad Ali Bukhari,	Code-061	9200042	9200045	0304-0920081	92007 25
23	D.C Khanewal	Ms. Salma Suleman,	Code-065	9200032	9200031	0304-090082	92000 33
24	Deputy Commissioner Lodhra	Ms. Lubna Nazir	Code-0608	9200066	9200200	0304-0920088	92000 77
25	Deputy Commissioner vehari	Ms. Imrana Touqir	Code-067	3362122	3363477	0304-0920094	*33636 88*
26	Deputy Commissioner	Dr. Hassan Waqar Cheema	Code-051	9292530-31	9292727	0304-0920070	92925 29
27	D.C Attock	Mr Rao Atif Raza	Code-057	9316010	9316010-12	0304-0920072	93160 11
28	Deputy Commissioner Chakwal	Ms. Sarah Hayat	Code-0543	660001	660001		66010 6
29	Deputy Commissioner Jhelum	Mr. Muhammad Meesam Abbas,	Code-0544	9270081	0304-0920071	0304-0920071	
30	D.C Sahiwal	Mr. Shahid Mehmood	Code-040	9200060-61		0304-0920086	92000 62
31	Deputy Commissioner Okara	Mr. Ahmed Usman Javaid	Code-044	9200025	0341-0922063	0304-0920063	92000 32

32	Deputy Commissioner Pakpattan	Ms. Maria Tariq,	**Code-0457**	374198	0304-0920087		**921009**
33	Deputy Commissioner Sargodha	Capt. (Retd.) Muhammad Waseem,	**Code-048**	9230025	9230046	0304-0920074	**99230026**
34	Deputy Commissioner Bhakkar	M Ashraf	**Code-0453**	9200188	9200388	0304-0920077	**9200161**
35	D.C Khushab	Ms. Farvah Aamir	**Code-0454**	920202	720470	0304-0920075	**920204**
36	D.C Mianwali	Mr. Khalid Javed Goraya	**Code-0459**	234300	232555	0304-0920076	**234895**
37	D.C Murree	Agha Zaheer Abbas Sherazi	-				
38	D.C Kot Addu	Syed Munawwar Abbas Bukhari	-	066-2550395	0321-9434844		

3. *DEOC Contact Numbers*

District Emergency Operation Center (DEOC)			
Sr. No	Division	District	Landline
1	Bahawalpur	Bahawalnagar	063-9240306
2		Bahawalpur	062-9250508
3		R.Y Khan	0368-923089
4	DG Khan	DG Khan	064-2460603
5		Layyah	0606-920016
6		Muzaffargarh	066-9200257
7		Rajanapur	0604-920029
8		Kot Addu	066-2550395
9	Faisalabad	Chiniot	047-6331247
10		Faisalabad	041-9201491
11		Jhang	047-9330005
12		TT Singh	046-9201003
13	Gujranwala	Gujranwala	055-9200070
14		Narowal	0542-920027
15		Sialkot	052-9250011
16	Gujrat	Gujrat	053-3727487
17		Hafizabad	0547-920111
18		M.B. Din	0546-650152
19		Wazirabad	055-6608566
20	Lahore	Kasur	049-2724954
21		Lahore	042-99210630
22		Nankana	056-9201046
23		Sheikhupurah	056-3612895
24	Multan	Khanewal	065-2551718
25		Lodhran	0608-546571
26		Multan	061-9200357
27		Vehari	0631-3365508
28	Rawalpindi	Attock	057-2700494
29		Chakwal	0543-660250
30		Jhelum	0544--970256
31		Rawalpindi	051-9292963
32		Murree	051-9260915
33		Talagang(AC)	0543-410938
34	Sahiwal	Okara	044-92000287
35		Pakpattan	0457-921020
36		Sahiwal	040-9200069
37	Sargodha	Bhakkar	045-3921082
38		Khoshab	0454-920215
39		Mianwali	045-9230611
40		Sargodha	048-9230043

4. DDMC Contact Numbers

District Disaster Management Coordinator (DDMC)				
Sr. #	**Designation**	**Name / Address**	**Tele. Office**	**Tele. Residence**
1	DDMC DG Khan Muzaffargarh, Rajanpur	Muhammad Irfan Sial	0336-7996887	0336-7996887
2	DDMC Sheikhupurah, Nankana Sahib,	M. Sajid Jamil	0300-4889338	0333-4498090
3	DDMC Rahim Yar Khan, Lodhran	M. Yaseen Nawaz	0321-6731881	0300-6731881
4	DDMCs Bahawalpur Bahawalnagar	Mahrukh	0315-7016078	0332-7232770
5	DDMCs Rawalpindi Attock Murree	Iftakhar Ahmad Raja		0300-5746140
6	DDMCs Jhelum Chakwal Mianwali	M Saboor Saqib		0333-5863919
7	DDMCs Multan Khanewal Vehari	Abdul Rehman	0304-7389941	0302-6876209
8	DDMCs Rajanpur	Mr. Muhammad Zamir		
9	DDMCs Faisalabad Jhang, Toba Tek Singh, Chiniot	\Mr. Abdul Khaliq Saeed Chishti		0334-5549414
10	DDMCs Kasur	Mr. Rashid Mahmood		

5. Punjab Emergency Services/ Rescue 1122

RESCUE-1122					
Sr. #	**Designation**	**Name / Address**	**Tele. Office**	**Tele. Residence**	**FAX NO.**
1	Director General (Rescue-1122)	Dr. Rizwan Naseer, punjabrescue@yahoo.com	042-37512222, 042-99332303	0333-4441122	
2	Deputy Director (Operations)	Mr. Ayaz Aslam	042-35131830	0323-6343900	
3	Head of Community Safety & Info.	Miss Deeba Shehnaz	042-35131880	0333-5471122	
REGIONAL EMERGENCY OFFICER (REOs)					
1	Regional Emergency Officer, Bahwalpur	Dr. Abdul Sattar	068-9230006	0332-4321122	
2	Regional Emergency Officer, Dera Ghazi Khan	Dr. Muhammad Natiq	0642-430383	0333-6475473	
3	Regional Emergency Officer, Faisalabad	Dr. Ishfaq Mian		0300-5124877	
4	Regional Emergency Officer, Gujranwala	Syed Kamal Abid		0336-2151122	
5	Regional Emergency Officer, Lahore	Dr. Muhammad Azam	042-99231702	0300-4437996	
6	Regional Emergency Officer, Multan	Dr. Ijaz Anjum	061-9220308	0333-7621122	
7	Regional Emergency Officer, Rawalpindi	Dr. Faisal Mehmood	051-5681114	0333-4471122	
8	Regional Emergency Officer, Sahiwal	Dr. Irshad-ul-Haq	040-9200105	0333-6713811	
9	Regional Emergency Officer, Sargodha	Dr. Foaad Shahzad Mirza		0345-7308299	

6. Pakistan Meteorological Department

METEOROLOGICAL DEPARTMENT/FLOOD FORECASTING WARNING BUREAU, 46-JAIL ROAD, LAHORE.					
Sr. #	**Designation**	**Name / Address**	**Tele. Office**	**Tele. Residence**	**FAX NO.**
1	Chief Meteorologist	Mr. Sahibzad Khan	042-99200208	0333-6139523	**99200209**
2	Director	Mr. Saqib Hussain		0345-9250367	**99205370**
3	Director	Ms. Nazia Akhtar	042-99201859		**99205370**

APPENDICES

SOPS FOR STAKEHOLDER CAPACITY BUILDING

- Pre-Monsoon Preparations: Ensure de-silting of nullahs and river channels within urban areas before the monsoon season begins.
- Monsoon Control Room Setup: Establish a Monsoon Control Room at the WASA Head Office that operates around the clock to monitor severe rain and flood emergencies.
- Duty Roster Creation: Formulate a flood control room duty roster that includes representatives from all relevant government departments operating within the urban framework.
- Interdepartmental Coordination: Maintain close coordination with the PMD, PEOC, and respective DEOCs for early warnings and to facilitate timely responses.
- Maintenance of Infrastructure: Confirm the operational integrity of all equipment and sewerage pumping stations, including undertaking de-watering activities using water pumps.
- Staff Readiness: Ensure all necessary personnel, especially those at emergency drainage centers and key pumping installations, are present and prepared.
- Post-Disaster Cleanup: Clear debris from roads and streets and remove sediment and silt deposits post-flood to ensure unobstructed water flow and mitigate environmental pollution.
- Electric Supply Coordination: Coordinate closely with WAPDA to guarantee uninterrupted electric supply to disposal and lift stations.
- Traffic Management Collaboration: Work closely with traffic police to maintain open traffic flows and prevent congestion.
- Evacuation and Rescue Operations: Collaborate with the Pak Army and Rescue 1122 to organize boats and rescuers for the safe evacuation of affected populations to relief camps.

DISCHARGE CAPACITY OF WATER AND FLOOD LIMITS IN RIVER INDUS, RIVER JHELUM, RIVER CHENAB, RIVER RAVI AND RIVER SUTLEJ AT VARIOUS POINTS

River	GaugeSite	Designed Capacity (Lac Cs.)	Flood limits in Lac Cs.				
			Low	Medium	High	Very high	Excp high
Indus	Kalabagh	9.50	2.50	3.75	5.00	6.50	8.00
	Chashma	10.00	2.50	3.75	5.00	6.50	8.00
	Taunsa	10.00	2.50	3.75	5.00	6.50	8.00
Jhelum	Kohala	12.00	1.00	1.50	5.00	3.00	4.00
	Mangla	10.60	0.75	1.10	1.50	2.25	3.00
	Rasul	8.50	0.75	1.10	1.50	2.25	3.00
Chenab	Marala	11.00	1.00	1.50	2.00	4.00	6.00
	Khanki	11.00	1.00	1.50	2.00	4.00	6.00
	Qadirabad	9.00	1.00	1.50	2.00	4.00	6.00
	Trimmu	6.45	1.50	2.00	3.00	4.50	6.00
	Punjnad	7.00	1.50	2.00	3.00	4.50	6.00
Ravi	Jassar	2.75	0.50	0.75	1.00	1.50	2.00
	Ravi Syphon	4.00	0.40	0.65	0.90	1.35	1.80
	Shahdara	2.50	0.40	0.65	0.90	1.35	1.80
	Balloki	3.80	0.40	0.65	0.90	1.35	1.80
	Sidhnai	1.50	0.30	0.45	0.60	0.90	1.30
Sutlej	G.S.Wala(Gauge)	25.30 ft	19.50	21.50	23.30	25.3	-
	Suleimanki	3.25	0.50	0.80	1.20	1.75	2.25
	Islam	3.00	0.50	0.80	1.20	1.75	2.25
	Mailsi Syphon	4.00	0.75	1.10	1.50	2.25	3.00

PROTOCOLS AND PROCEDURES FOR EARLY WARNING DISSEMINATION AND EMERGENCY RESPONSE COORDINATION BY DISTRICT CONTROL ROOMS

Protocols	Details
Alert Reception	Early warnings are efficiently communicated through various authoritative sources such as the Provincial Disaster Management Authority (PDMA), the Pakistan Meteorological Department for severe weather events like heavy rains and storms, and the Hydrological Department at WAPDA Mangla Dam for flood and dam outflow alerts. Additional critical updates are provided by Rescue 1122 regarding road accidents, fires, building collapses, and drownings. Alerts on riots, violence, and terrorist activities come from Civil Defense and police units, while the Health Department issues notifications concerning epidemics. These alerts are disseminated through emails, phone calls, and SMS, tailored to the urgency and severity of each situation.
Functions of Control Room	Data Management: Efficient collection and dissemination of information. Interdepartmental Coordination: Establish robust coordination among relevant departments. Targeted Communication: Engage with specific departments based on the nature and urgency of the situation. Resource Management: Effective dispatching and tracking of resources. Upon receipt of critical information, the district control room promptly dispatches warnings to relevant stakeholders including government departments, the public, and media. These notifications are communicated to the designated focal person or district head via email, SMS, or phone call, based on the urgency of the alert. This process is executed following approval from the chairman of the District Disaster Management Authority (DDMA), ensuring a coordinated and timely response.
Methods for Disseminating Early Warning Alerts to the Targeted Populations	The process of issuing relevant warnings to at-risk populations is structured into three distinct phases: Phase 1: Preliminary Notice: Meetings of Headmen (Lumberdars) are conducted and notices are delivered by local officials such as Lumberdars, Patwari and Gardawar informing residents of vulnerable areas about making alternate arrangements for valuable items in anticipation of potential emergency evacuations. Phase 2: Preparedness Drills: Mock exercises and drills focused on evacuation procedures are conducted by relevant departments to ensure readiness. Phase 3: Urgent Alert Issuance: Upon the District Disaster Management Authority (DDMA) escalating to a high alert of level B, warnings are broadcasted using sirens, loudspeakers, megaphones, and electronic media to ensure wide-reaching and immediate awareness.

ACRONYMS

DDMA:	District Disaster Management Authority	**NGOs:**	Non-Governmental Organizations
DEOC:	District Emergency Operation Center	**PID:**	Punjab Irrigation Department
NDMA:	National Disaster Management Authority	**PDMA:**	Provincial Disaster Management Authority
DRR:	Disaster Risk Reduction	**PEOC:**	Provincial Emergency Operation Center
PMD:	Pakistan Meteorological Department	**FFC:**	Federal Flood Commission
SMBR:	Senior Member Board of Revenue	**FFD:**	Flood Forecasting Division
HRF:	Humanitarian Response Facility	**WHH**	Welthelf hunger
EOC:	Emergency Operation Center	**IEWS:**	Integrated Early Warning System
UNICEF:	United Nations International	**WFP:**	World Food Programme
	Children's Emergency Fund	**PWDs:**	Persons with disabilities
WHO:	World Health Organization		