MONSOON CONTINGENCY PLAN 2022
PUNJAB

PROVINCIAL DISASTER MANAGEMENT AUTHORITY,
GOVERNMENT OF PUNJAB

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GLOSSARY OF ACRONYMS

BHU: Basic Health Unit

CBO: Community Based Organizations

CERT: Community Emergency Response Training

DDMA: District Disaster Management Authority

DEOC: District Emergency Operation Center

DHQ: District Head Quarter

DRR: Disaster Risk Reduction

EOC: Emergency Operations Center

FFC: Federal Flood Commission

FFD: Flood Forecasting Division

HRF: Humanitarian Response Facility

IDP: Internally Displaced Person

IEWS: Integrated Early Warning System

LOC: Line of Control

MIRA: Multi-Sector Initial Rapid Assessment

NDMA: National Disaster Management Authority

NGOs: Non-Governmental Organizations

PID: Provincial Irrigation Department

PDMA: Provincial Disaster Management Authority

PDRF: Punjab Disaster Response Force

PEOC: Provincial Emergency Operation Center

PMD: Pakistan Meteorological Department

PRCS: Pakistan Red Crescent Society

SMBR: Senior Member Board of Revenue

THQ: Tehsil Head Quarter

UNICEF: United Nations International Children's Emergency Fund

WHO: World Health Organization

WFP: World Food Programme

Acknowledgement

Past experiences demonstrate the need for an effective and well-coordinated emergency response management to minimize the human and material losses. Realizing its importance, the Provincial Disaster Management Authority together with key line department take all possible measures to prepare for and respond to emergency in well-coordinated manners. The development of the Monsoon Contingency Plan is the continuation of such efforts to identify and optimum utilization of resources with all Provincial and District level government departments, and joining hands together to prepare for and respond to flood emergencies in efficient and swift manner.

This plan has been developed under the overall guidance and leadership of **Mr. Zahid Ahktar Zaman, Senior Member Board of Revenue/ Relief Commissioner Punjab**, who provided the required support to accomplish the task. I must acknowledge and appreciate the efforts of Mr. Falak Nawaz (Consultant on Disaster Management), Mr. Muhammad Usman Khalid, Director PDMA and Mr. Nisar Ahmed Sani, Director Operation, for steering the process. Further, acknowledgement is due to our District Disaster Management Coordinators (DDMCs) who gave their valuable input in finalization of the plan (Malik Waseem Awan, Syed Muhammad Hassan Turab, Raja Iftikhar Ahmed, Mr. Majid Zaman Khan, Mr. Ahsan Yasin and Mr. Arsalan Fareed, IT Assistant). I am also grateful for the input of various key Departments of Government of the Punjab and District Administrations who provided district and departmental contingency plans well in time. I am confident that the plan will provide direction towards utilization of available resources, which will ultimately help in responding to flood emergences in efficient manner.

FAISAL FAREED
Director General, PDMA Punjab

Executive Summary

Since its establishment during 2008, the Provincial Disaster Management Authority Punjab has made tremendous efforts in shifting paradigm from reactive to proactive approach with more focus on mitigation, prevention, and preparedness. Likewise, facing to some of major disasters during recent years, the PDMA was able to handle disasters very effectively with the close coordination of all government and non-government stakeholders, which ultimately helps in building internal capacities to manage disasters by undertaking several initiatives including the development of scenario based multi-hazard vulnerability and risk assessment, establishment of hi-tech provincial and district levels emergency operation centers, satellite based connectivity with DDMAs and line departments for early warning dissemination, Punjab disaster management information system, establishing humanitarian response facilities with all possible emergency response stockpiling, DSNGS Vans, and mobile communication facilities etc.

The preparation for monsoon season is one among such initiative, where PDMA takes all preparedness measures well before the onset of monsoon to keep ready for facing any emergency situation arising due to heavy spell of raining and flood disaster. The development of Monsoon Contingency Plan is the continuation of such efforts to check the readiness, pool available resources, share responsibilities and monitor situation on 24/7 basis through flood controls rooms established at the Provincial and District level emergency operation centers. The plan has been developed through series of consultations with the District Disaster Management Coordinators, DDMAs, Provincial and National level stakeholders and in-house deliberate discussion and review at the PDMA followed by organizing a one-day consultation and validation workshop held at Lahore with the key Government and Non-Government Stakeholders.

This Monsoon Contingency Plan has been divided into three main sections i.e. (i). Context and Background to Flood Risk in Punjab (ii) Pre-flood preparedness and mitigation. (iii) Post Flood Response, Relief and Rehabilitation plan.

The first section gives an overview about the phenomenon of monsoon clouds, and explain various types of floods originating as a result of monsoon heavy rains. The plan also enumerates major Rivers, Barrages and Headworks established which have witnessed some of major riverine floods in the past. The past flood disaster history helps in identifying the lag time between different Barrages/Headworks to calculate the arrival time of flood water in the rivers of Punjab. The major nullahs specifically in Narowal, Sialkot and Rawalpindi districts have also been explained which are major sources of flash floods in the districts while the hill torrents of Dera Ghazi Khan and Rajanpur are another important sources of flash floods causing severe damages in these districts.

The second section explains the current strategy to cope up with the monsoon flood emergencies, where the PDMA takes support for the PMD's monsoon weather outlook on weekly basis, and follow-up standard operating procedures for riverine and

urban flooding. For early warning receipts and disseminations, the PDMA has established certain alert levels which has been explained in the document. While the establishment of the flood control rooms at PDMA and DDMAs. The role and responsibilities of major stakeholders have been clarified to enable them to play their effective roles with shared responsibilities. The preparedness measures at the community level including conducting of mock drills and capacity building initiatives of professionally trained volunteers have been enlisted with their possible involvement during the flood emergency situation. This section also enumerates the emergency response resources available with the PDMA, Pak Army, other relevant department and with the District Administration.

The activation procedures of provincial and districts emergency operation centers have been explained in section three. The PEOC will serve as the hub of coordination to respond to flood disaster. The center shall receive early warnings and issue information to the general public, media, ministries, departments, and humanitarian response agencies. The PEOC and all DEOCs shall be operational round the clock until the affected communities have been rescued, evacuated, and aided with relief goods. Besides, other major functions of the PEOC and DEOCs i.e. plan for safer evacuation, provide first aid, search and rescue, ensure medical health care facilities, damage and need assessment, relief distribution, rehabilitation and recovery process with safe return of the evacuee after the retreat of flood disaster.

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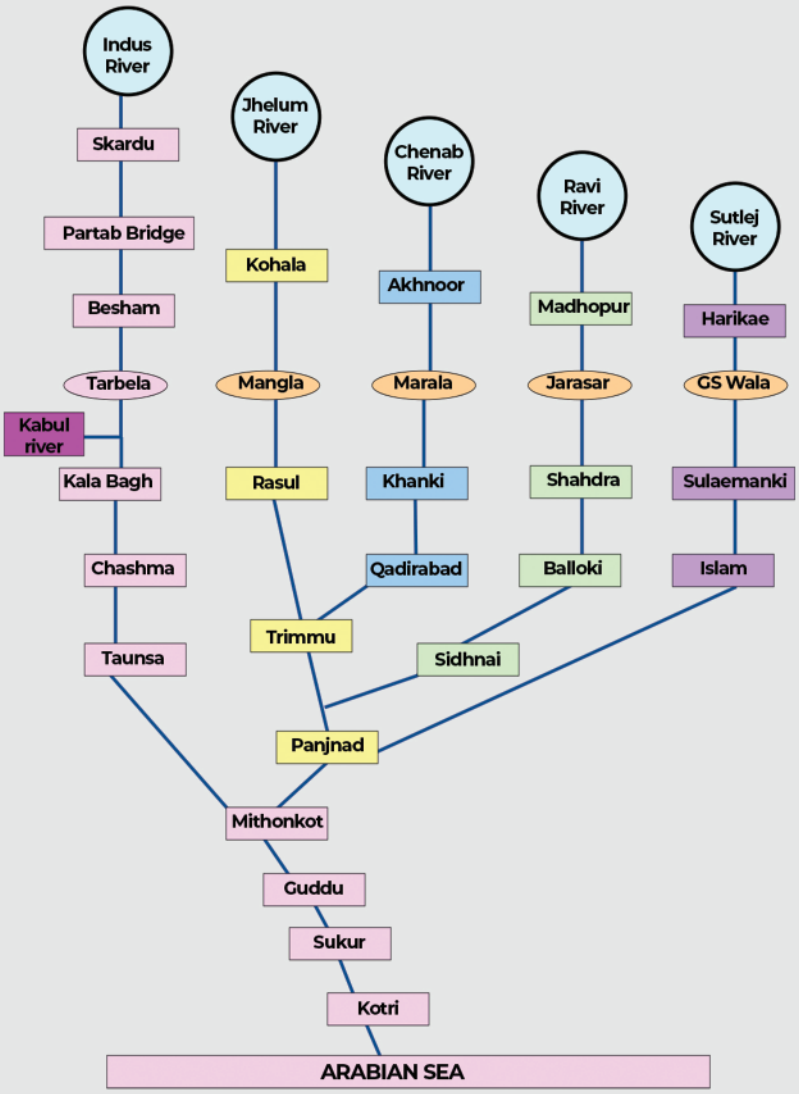
SECTION ONE

CONTEXT & BACKGROUND

FLOOD RISK IN PUNJAB



1.1. INTRODUCTION

An effective and well-coordinated emergency response management contributes to flood disaster risk reduction. Flood risks can be reduced by decreasing the magnitude of hazards, preventing exposure of individuals and their activities to flooding and reducing the vulnerabilities of flood-prone communities (Figure 1.1). Provincial Disaster Management Authority has made considerable progress in targeting interventions through Monsoon Contingency Plan every year that involve "making decisions in advance about the management of human and financial resources, coordination and communications procedures, and being aware of a range of technical and logistic responses". Contingency planning analyzes the potential impact of a disaster, anticipates problems that might occur during the humanitarian interventions, and organizes the response in advance in order to promptly respond to the needs of the population affected by the disaster.

The Monsoon Contingency Plan serves as a tool to provide basic information on preparedness and implementation activities for flood emergency planning. It is written primarily for flood disaster managers within organization at provincial and district level and various line departments, as they are involved in formulating flood disaster management policies and strategies, and need immediate access to information to engage with emergency planning and response mechanisms as part of their overall flood management strategy.

1.2. PURPOSE

The purpose of developing Monsoon Contingency Plan 2022 is to provide information and guidelines to all the stakeholders, especially the District Administration, regarding the necessary measures required for readiness and preparation to manage the flood. The objective is to save the lives, livelihood, properties and infrastructure by employing all available resources. This outlines a comprehensive, integrated and coordinated approach, and reflects a shared responsibility for flood related emergency response management.

Figure 1.1: Correlation between hazzard, exposure and vulnerability to reduce the risk of flood

1.3. SCOPE OF THE PLAN

This Monsoon Contingency Plan covers various aspects of flooding such as Riverine Flooding, Urban Flooding, & Flash Flooding in various parts of Punjab and the concomitant mitigation and response measures. The scope of this plan includes:

- Description of potential and observed consequences of floods to the social, built, economic and natural environments of the province along with the strategy to reduce the detrimental impacts of such consequences.
- The policy, practices, and Standard Operating Procedures (SOPs), in place to mitigate flood risks and build community resilience before, during and after occurrence of flood.
- The institutional and Organizational responsibilities and inter-organizational coordination to undertake various activities for rescue, provision of relief, rehabilitation activities during and after the flood events at local, national and international levels.

1.4. GEOGRAPHIC AND DEMOGRAPHIC SETTINGS OF PUNJAB PROVINCE

The Province of Punjab, as its name suggests, a land of five rivers, that traverse across province bringing fertile alluviums and irrigate agricultural lands by the canal irrigation system making it the food basket of Pakistan and a source of living for millions of people. Although River Indus is the main river flowing through all four provinces including Gilgit-Baltistan, Khyber Pakhtunkhwa, Punjab and Sindh Provinces, the other major rivers namely Chenab, Jhelum, Sutlej, Beas and Ravi join it at various locations on or before the Panjnad in Bahawalpur District of Punjab and joined as one major river flowing throughout the Sindh Province and finally merge into Arabian Sea (Figure 1.2).

The Province covers a total area of 205,345 km^2, and considered as Pakistan's second largest province by area after Balochistan. It occupies 25.9% of the total landmass of the country[1] . The Province is predominantly covered with the alluvial plains formed by the sediments bringing down by the five major rivers. Besides the plain land, the beautiful picturesque undulating land of Potohar Plateau is situated in the North-East direction and Thal and Cholistan Desert in the South-Eastern part of the Province. The beautiful foothills of the Himalayan mountain series are situated in the North and North-Western part of the province with Murree city as major tourist attraction resort.

According to the population census of 2017 statistics, the total population of Punjab province is 109,989,655 accounts for around 53% of the country's total population share. The total population living in urban areas is recorded as 40,547,205 with a share of 36.86% against 69,442,450 in rural areas with a share of 63.14%. The average population density of the province is 536 person/km^2.

[1]Pakistan Bureau of Statistics, Ministry of Planning, Development and Special Initiatives. "Provincial Census Report for 2017". P.29

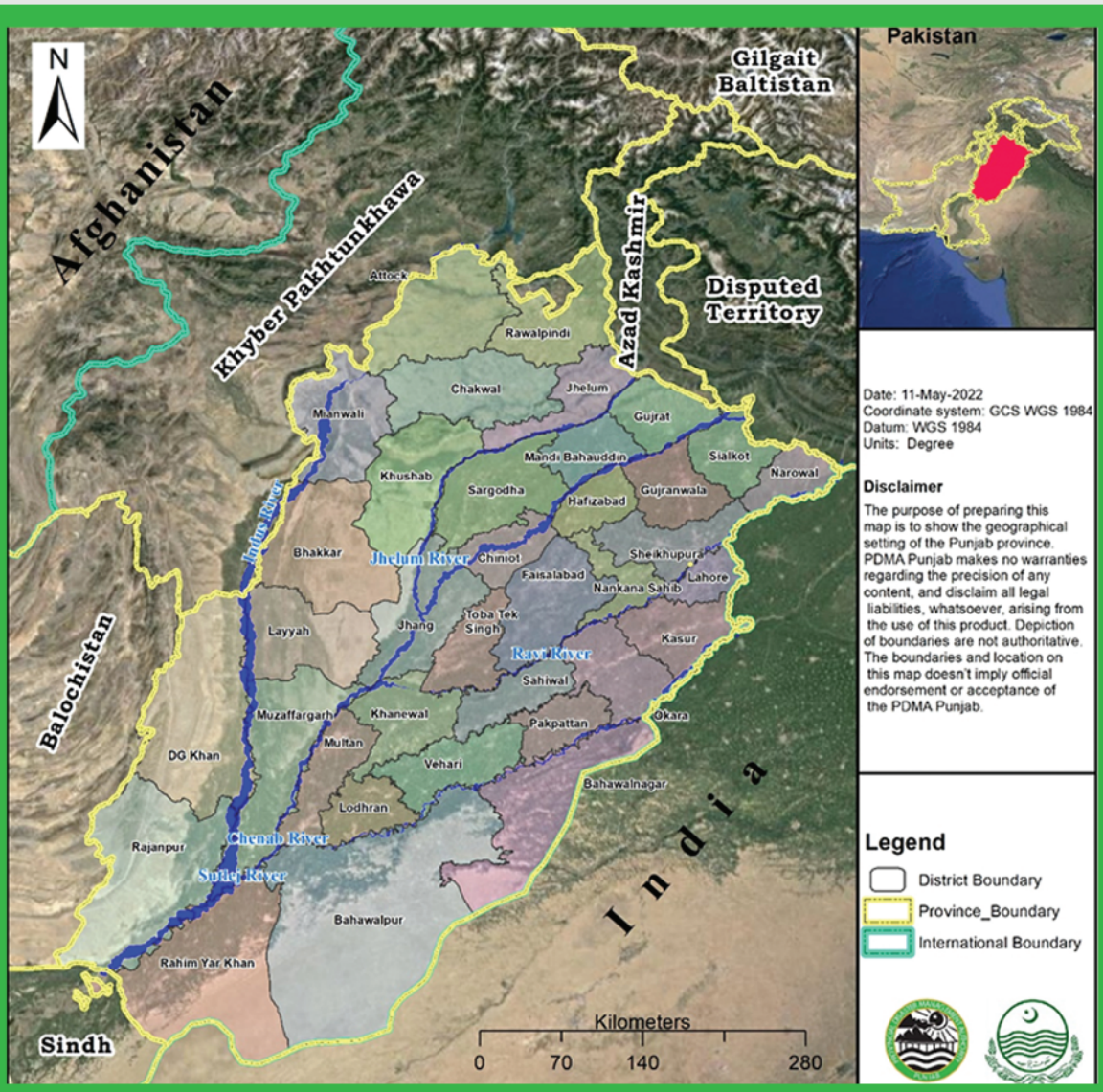


Figure 1.2: Geographical Map of Punjab Province

1.5. CLIMATE AND WEATHER

Most areas in Punjab experience extreme hot weather during summer and cold foggy in winter especially in the plain areas. Over the years, the temperature ranges between -1°C to 42°C. However, occasionally it reaches up to 48°C in summers and can touch down to -05°C in winter. Most of the rainfall receive during Monsoon season, anticipated to reach Punjab by the end of June and continue till September first half, although irregularities found in weather pattern and rainfall distribution since early 1970s. The average annual rainfall ranges between 120mm in Bahawalpur

division to 1778.2mm in Rawalpindi and in 1004mm in Sialkot divisions[2] . The North-Western parts of the province lie on the foothills of the Himalayan range and hence experience higher rainfall, especially in the monsoon season. Murree, which lies in the Rawalpindi division experiences 1778mm of rainfall on average annually. The rest of the province is mostly semi-arid and plain which receives considerably less rainfall throughout the year. The southern parts of the province are predominantly dry arid land, with deserts in the extreme south bordering India and Sindh Province[3] .

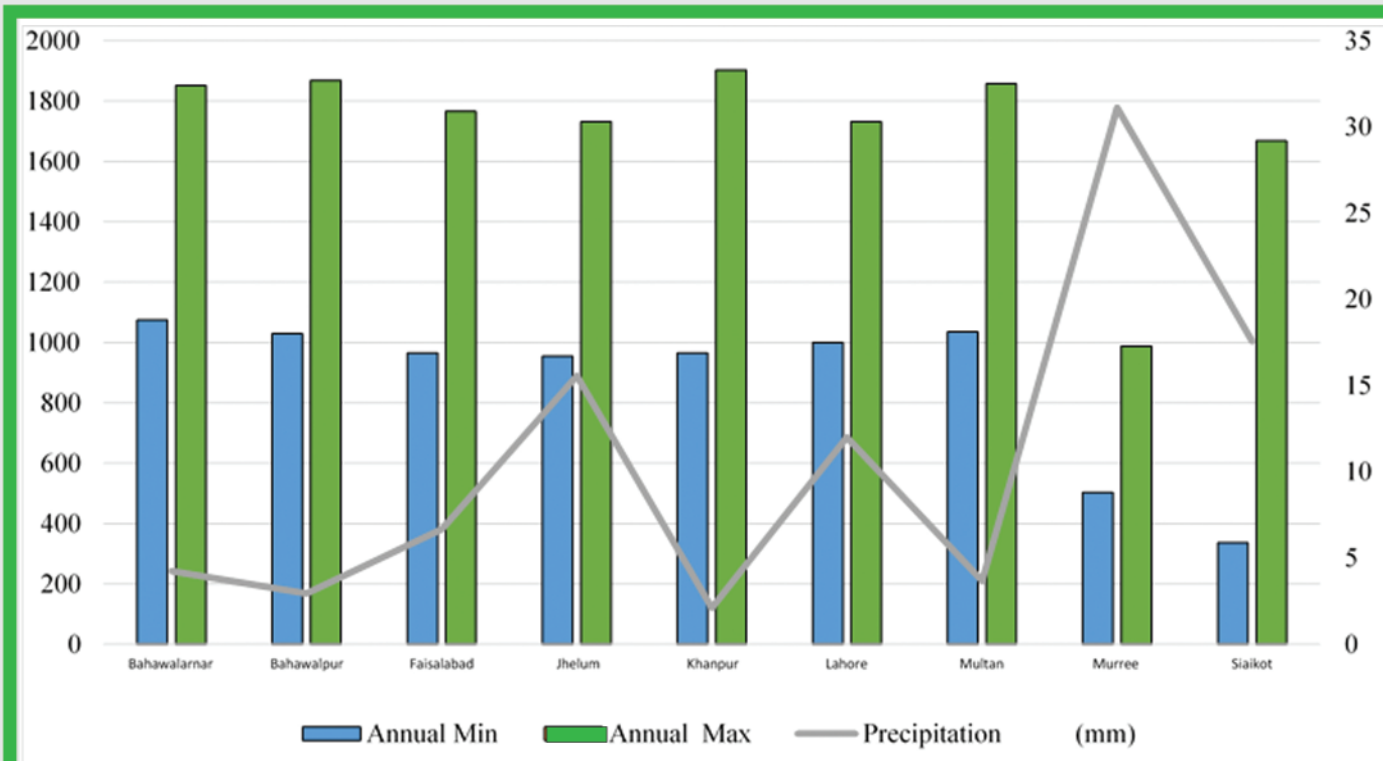


Figure 1.3: Climograph of Punjab Province Showing Average Annual Temperature and Precipitation

1.6.CURRENT WEATHER FORECAST

According to the data shared by the Pakistan Meteorological Department (PMD), the average snowfall in the catchment areas remained almost 15% less than normal snowfall in winter season 2021-22 as shown in the figure 1.4. However, the average temperatures during March, April and May remained above normal creating heatwave and drought like situation in plain areas of Punjab and GLOF event in the Northern Part of Pakistan.

[2]Pakistan Bureau of Statistics, Ministry of Planning, Development and Special Initiatives. "Provincial Census Report for 2017". P.30
[3]Pakistan Bureau of Statistics, Ministry of Planning, Development and Special Initiatives. "Provincial Census Report for 2017". P.37

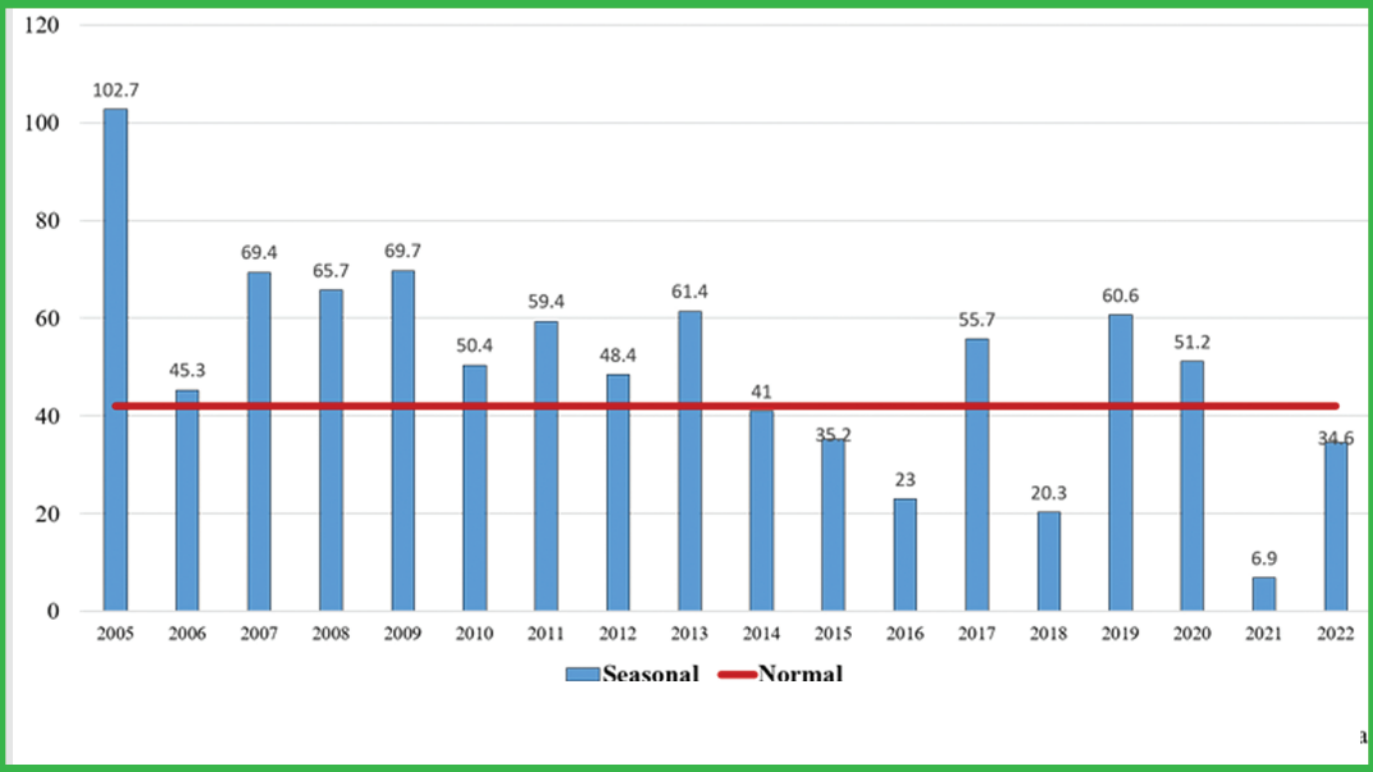


Figure 1.4: The Winter Season Snowfall Remained Below Average in Pakistan (2005-2022)

PMD has shared the weather outlook for the next three months based on the global and regional circulation patterns, the outlook for monsoon 2022 in Pakistan. The main features have been summarized as follows:

- Overall, a tendency for above normal (25 to 30%) precipitation is likely over the country during forecast season (July, August and September).
- Monsoon onset is expected during the last week of June whereas pre-monsoon rains may occur from second week of June.
- Monsoon rainfall is expected to be above normal over Punjab and Sindh whereas slightly above normal rainfall is expected over remaining parts of the country.
- First phase (1st July to mid-August) of monsoon is expected to be wet as compared to the last phase (mid-August to end of September).

Figure 1.5: Temperature Comparison between Normal and February 2022 Minimum Temperatures (in C°)

IMPACTS

- Extreme hydro-meteorological events may generate riverine floods
- Heavy rainfall events flash/urban flooding in hill torrents areas and plain areas of major cities of Sindh, Punjab, AJK and KP.
- Above normal temperatures in high altitudes are likely to increase rate of snowmelt.
- Sufficient water availability for irrigation and power sectors will be a good impact

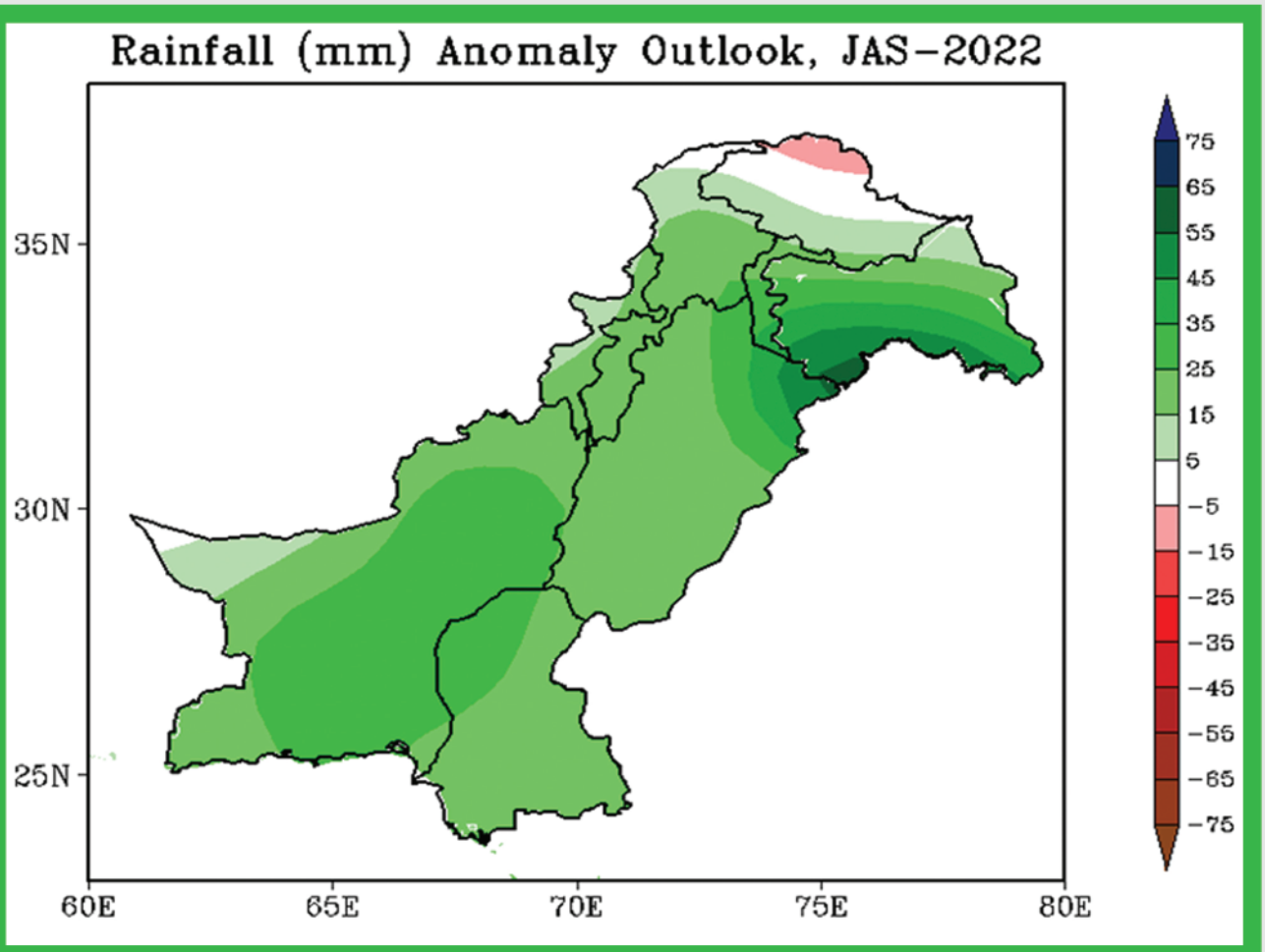


Figure 1.6: Rainfall Anomaly Outlook, JAS-2022 (mm)

1.7. AN OVERVIEW OF FLOODS AS MONSOON HAZARD IN PUNJAB PROVINCE

The main causes of heavy rainfall followed by flooding, are the Monsoon winds which brings heavy clouds and causing torrential rains, ultimately overflowing of rivers during the summer season in the country. In case of Punjab, the monsoon low depression starts developing in the Bay of Bengal in middle of June and intermittently contin

ue till middle of September and brings torrential rainfall accompanied by heavy thunderstorms and cloud burst. These Monsoon winds enters in the province via India in the West/North-Westerly and then towards Northern direction. The mountain ranges in the extreme Northern part provide perennial source of raining caused inflow into the rivers on Punjab.

The Monsoon heavy rainfall accompanied with the rapid glacier melting during the summer season in the Northern Pakistan bring heavy flow of water in rivers causing severe flooding down in the plain areas of Punjab. Therefore, beyond the Province, the PDMA Punjab keeps close liaison with the NDMA, FFD of PMD and FFC for watching out the weather conditions and flow in the rivers of Punjab.

1.8. TYPES OF FLOODS

1.8.1. Fluvial Floods

As explained above that monsoon winds are the main source of bringing heavy clouds to the Central and Northern parts of the province. These clouds burst in the form of heavy rainfall in catchment areas cause flooding in the rivers and specifically when these clouds are further accompanied with the rapid melting of glaciers in the Northern part of the country, it causes heavy floods down in Punjab Province being in the lower riparian. The districts that are situated on the path of these major rivers are prone to frequent flooding including Mianwali, Bhakkar, Layyah, Dera Ghazi Khan, Rajanpur, Muzaffargarh, Rahim Yar Khan, Jhelum, Mundi Bahauddin, Sargodha, Khushab, Jhang, Multan, Gujrat, Hafizabad, Chiniot, Gujranwala, Kasur and Narowal etc.

1.8.2. Pluvial Floods

Pluvial floods with severe cloud burst and thunderstorms are another common types of flood disaster that are frequently occurring in the hilly areas of Districts like Dera Ghazi Khan, Mianwali and Rajanpur etc. This type of flood phenomena is becoming as serious threat as riverine floods. Pluvial floods form when there is severe cloud burst resulting erratic rainfall in shorter period of time as a result of which the raining water cannot be absorbed. The excessive water quickly changes from runoff into hill torrents and nullahs, overwhelming it and thus causing flash floods. Pluvial floods can cause water to rise significantly in a shorter period of time, leaving no or very less time for response and evacuation.

1.8.3. Urban Floods

The urban floods are becoming more common in major cities due to swelling of the drains and nullahs, environmental pollution, unplanned development and poor local governance systems and capacities etc. The Lai Nullah in Rawalpindi is best example where the Nullah regularly poses serious threats to the dwellers as heavy rains in the Margalla Hills in Islamabad result sudden rise of waters in the Nullah. The District Government spent huge amount to protect infrastructure and general public due to sudden rise of water level causing flash floods in the Lai Nullah. Other cities like Lahore, Gujranwala, Sialkot, Narowal, and Sheikhupura are similar examples that are at risk of urban flooding due to drainage canals such as Nullah Deg, Aik, Bhed, Basantar and others.

Pakistan is among the world's most disaster-prone countries. As Pakistan has encountered over the past 6-7 years, flooding is one of the world's most severe environmental threats resulting from climate change. The country has undergone an increase in the frequency and magnitude of natural disasters over the last decade, such as floods, droughts, thrilling temperatures, and high incidences of pests and diseases. In 2010, 2011, 2012, and 2015, respectively Pakistan was listed as the 29th 16th, 12th, and 8th highly vulnerable to flood and ranked 7th among the countries severely exposed to climate and climate related hazards. Punjab, being on the lower riparian, is worst affected by all these flood events.

PERIOD	FLOOD FREQUENCY	ECONOMIC LOSS (000$)	TOTAL AFFECTED POPULATION	TOTAL DEATHS
1950-1959	6	179,000	36,954	3691
1960-1969	2	3,300	224,427	32
1970-1979	5	1,166,500	13,637,200	2066
1980-1989	7	13,670,000	1,304,900	519
1990-1999	14	1,092,230	18,148,606	4180
2000-2009	33	706,148	9,574,150	2265
2010-2019	30	18,113,000	36,495,066	4712

Table 1.1: Flood Damages in Pakistan

1.9. CONTRIBUTORY FACTORS OF AGGRAVATING FLOODS IN PUNJAB

There are two major contributory factors which provoke heavy raining into floods. These factors are as follows.

1.9.1. Physical Factors

There are range of physical factors that contribute in aggravating floods i.e. physiography, heavy rainfall, prolonged rainfall, glacier melting, and glacial lake outburst floods etc.

1.9.2. Human Factors

There are range of physical factors that play contributory factors in aggravating floods i.e. physiography, heavy rainfall, prolonged rainfall, glacier melting, and glacial lake outburst floods etc.

1.10. RIVERS AND BARRAGES OF PUNJAB PROVINCE

As mentioned above that five major Rivers are flowing in the province. These five Rivers meet together at or above the Panjnad situated in District Bahawalpur. After Panjnad, the four Rivers namely Sutlej, Ravi, Chenab and Jhelum merge into Indus River and flow downstream as one Major River in the Sindh Province. A number of Barrages and Head-works have been constructed in past over these five Rivers. The detail of major rivers along with name of Barrages and Headworks have been mentioned below:

1.10.1. River Indus

The Indus River is a Trans-Himalayan River and the longest one in Pakistan. It originates near Lake Manasarovar on the plateau of Tibet in China. In Pakistan, it flows from the eastern basins of Jhelum, Chenab, Ravi and Sutlej, as well as from its western tributaries, including Kabul, Kurram, Swat and Gomal. The major engineering structures built over Indus are Tarbela Dam, Jinnah, Chashma, Taunsa, Guddu, Sukkur and Kotri Barrages. According to Punjab Irrigation Department statistics (2018)[4] , the total length of the Indus River is 3,180KM, out of which, the Indus flows in Punjab Province for about 547KM while the current length of the bunds along the River is 811KM, along with a total of 131 Spurs. Important Barrages constructed on River Indus are Jinnah Barrage, Chashma Barrage, Taunsa Barrage and Guddu Barrage. The districts affected by the Indus during 2010 and 2014 floods in Punjab include Mianwali, Bhakkar, Layyah, Muzaffargarh, Dera Ghazi Khan, Rajanpur and Rahim Yar Khan.

Site	Discharge Capacity	Flood Limit (in Lac Cusecs)				
		Low	Medium	High	Very High	Exceptionally High
Tarbela	15	2.5	3.75	5	6.5	8
Kalabagh	9.5	2.5	3.75	5	6.5	8
Chashma	9.5	2.5	3.75	5	6.5	8
Taunsa	10	2.5	3.75	5	6.5	8

Table 1.2: Discharge Capacity of Water and Flood Limits in River Indus at Various Locations

1.10.2. River Jhelum

The River Jhelum originates from a deep spring at Vernag situated in the Western Jammu and Kashmir State of the Indian-occupied Kashmir. At Muzaffarabad, it receives the Kishanganga River and then bends southward, forming part of the border between Azad Kashmir to the East and Khyber Pakhtunkhwa province to the West. The River then flows southward into Punjab Province. The important engineering structures built

[4]Noted from Provincial Disaster Management Authority, Government of Punjab., "Punjab Disaster Response Plan 2021"

on the River include Mangla Dam, Rasul Barrage and Trimmu Barrages. According to Punjab Irrigation Department statistics, the length of the Jhelum River in Punjab is 363KM, and the existing length of bunds along the River is 155KM, along with 43 Spurs.

Site	Discharge Capacity	Flood Limit (in Lac Cusecs)				
		Low	Medium	High	Very High	Exceptionally High
Mangla	10.6	0.75	1.1	1.5	2.25	3
Rasul	8.5	0.75	1.1	1.5	2.25	3
Khushab Bridge	-	-	-	-	-	-

Table 1.3: Discharge Capacity of Water and Flood Limits in River Jhelum at Various Locations

1.10.3. River Chenab

The River Chenab enters Pakistan slightly above the Marala Headworks. The main engineering structures built on the Chenab River are the Salal and Baglihar Dams in India, and the Marala, Khanki, Qadirabad, Trimmu and Panjnad Barrages in Pakistan. The River has twelve major tributaries, eight of which, including Jammu Tavi, Manavar Tavi, Doara, Dowara, Halsi, Bhimber, Palku and Buddhi, join the Chenab River in Pakistan. Chenab flows through the alluvial plain of Punjab Province and join the Jhelum River at Trimmu, and further downstream by the Ravi and Sutlej Rivers. The length of the Chenab in Punjab is 731KM. The districts affected by the Chenab River floods in 2014 include Gujranwala, Gujrat, Sialkot, Sargodha Chiniot, Hafizabad, Jhang, Khanewal and Multan.

Site	Discharge Capacity	Flood Limit (in Lac Cusecs)				
		Low	Medium	High	Very High	Exceptionally High
Marala	11	1	1.5	2	4	6
Khanki	8	1	1.5	2	4	6
Qadirabad	8.07	1	1.5	2	4	6
Chiniot Bridge	-	-	-	-	-	-
Trimmu	6.45	1.5	2	3	4.5	6
Punjnad	7	1.5	2	3	4.5	6

Table 1.4: Discharge Capacity of Water and Flood Limits in River Chenab at Various Locations

Ravi is a trans-boundary River, crossing the North-Western India and Eastern Pakistan. It originates from the lesser Himalayas range in India. Five major tributaries of the River (Ujh, Bein, Basantar, Deg, and Hudiara Nullas – upper catchments) lie in India out of which Deg Nullah is the largest tributary (256KM). The River runs almost along the Indo-Pak border, i.e., 15KM downstream of Madhopur (India) to 32KM upstream of Shah

dra (Pakistan). It flows near Lahore, turns West near Kamalia, and empties into the Chenab River South of Ahmadpur Sial. The major engineering structures built over Ravi include Madopur Barrage (India), and Balloki and Sidhnai Barrages (Pakistan). The total length of the Ravi River in Punjab is 694KM.

Site	Discharge Capacity	Flood Limit (in Lac Cusecs)				
		Low	Medium	High	Very High	Exceptionally High
Jassar	2.75	0.5	0.75	1	1.5	2
Ravi Syphon	4.5	0.4	0.65	0.9	1.35	1.8
Shahdara	2.5	0.4	0.65	0.9	1.35	1.8
Balloki	2.25	0.4	0.65	0.9	1.35	1.8
Sidhnai	1.5	0.3	0.45	0.6	0.9	-

Table 1.5: Discharge Capacity of Water
and Flood Limits in River Ravi at Various Locations

1.10.5. River Sutlej

Sutlej River originates from Western Tibet in the Kailas mountain ranges and near the source of Indus, Ganges, and Brahmaputra Rivers. The major engineering structures built over Sutlej River include Bhakra, Nangal, Pong, and Pandoh dams (India); Rupar, Harike, and Ferozpur barrages (India), and Sulemanki and Islam Barrages (Pakistan). The length of the Ravi River in Punjab is 515KM while existing length of bunds along the River is 406KM along with 30 Spurs.

Site	Discharge Capacity	Flood Limit (in Lac Cusecs)				
		Low	Medium	High	Very High	Exceptionally High
G. S. Wala	1.5	19.5	21.5	23.3	25.3	-
Suleimanki	1.5	0.5	0.8	1.2	1.75	2.75
Islam	1.5	0.5	0.8	1.2	1.75	2.75
Mailsi Syphon	-	0.5	0.8	1.2	1.75	2.75

Table 1.6: Discharge Capacity of Water and
Flood Limits in River Sutlej at Various Locations

1.11. NULLAHS

Number of important Nullahs are flowing in Punjab specifically in Sialkot and Narowal Districts. The nullahs are intermittently bring water and mostly remain dry. Whenever heavy rains occur, the nullah swells up but suddenly disappear causing localized damages to standing crops, trees, homes and other infrastructures etc. Some of Nullahs include Palkhu, Deg, Aik, Basantar, Bein etc. are flowing in District Sialkot and Narowal, while the famous Lai Nullah is flowing inside Rawalpindi city, causing frequent damages to infrastructure due to heavy encroachment along the Lai Nullah.

Table: 1.7: Major Nullahs of Gujranwala and Rawalpindi Division

NAME OF NULLAH	LENGTH (KM)	INUNDATION AREA	OUTFALL	MAXIMUM DISCHARGE RECORDED (IN CUSECS)
NULLAHS OF GUJRANWALA DIVISION[5]				
Palkhu at Sialkot Cantt	80	Sialkot Cantt and Wazirabad	River Chenab D/S Crossing of Gujranwala Gujrat G.T. Road U/S Khanki	4,525 (2020)
AIK at Ura	56	Sialkot and Sambrial	Nullah Palkhu before Wazirabad	44,386 (26th Sep 2014)
Deg at Kingra Bridge	160	Zafarwal, Chawinda, Pasrur, Q.S. Singh, Gujran-wala, Muridke, and Ferozewala	UP-Stream of Balloki H/W near Sharqpur Sharif	75,102 (26th Sept 2014)
Bein at Shahargarh	48	Shakargarh	River Ravi U/S Jassar Bridge	143,000 29th Jul 1961)
Basantar at Narowal	51	Narowal	River Ravi Down Stream of discharge Site of Jassar Bridge	43,000 (24th Aug 1996)
NULLAH OF RAWALPINDI DISTRICT				
Lai at Rawalpindi	30	Rawalpindi urban areas	River Soan	23rd July 2001

1.11.1. The Palkhu Nullah

The Nullah Palkhu originates near the town of Saidpur in Bajwat area of India. It enters into Pakistan from Indian held Kashmir near village Vens at LOC. It passes through Sialkot City, Sambrial, Wazirabad and outfalls in Chenab River upstream of Khanki Headworks. The total length of the Nullah from LOC to outfall is 96.5KM. It is used for irrigation purposes along with its entire course and is also serving as sewage drain both for Sialkot and Wazirabad Cities. The upper catchment area is hilly and the flood water enters Pakistan territory at a high velocity due to which the water levels in the Nullah rises suddenly. The maximum discharge of 4525 Cusecs was recorded during 2020 at Sialkot Bridge, while the absorbing capacity of nullah is only 3500 cusecs.

1.11.2. The Aik Nullah

Aik Nullah enters in Pakistan from Jammu & Kashmir and passes through the major city of Sialkot.

[5]Federal Flood Commission Government of Pakistan, available at https://ffc.gov.pk/technical-guidelines/

It falls into major Nullah Palkhu near Wazirabad, which eventually falls in the River Chenab upstream of Khanki Barrage. Flooding in Aik Nullah is a major problem due to which Residents of Sialkot city suffers almost every other year. The maximum recorded flood water of 44,386 cusecs was noted down on 26th September 2014, while the Nullah absorbing capacity is 2500 cusecs at Urra Bridge Sialkot.

1.11.3. The Deg Nullah

Deg Nullah is one of the major tributaries of River Ravi. It enters into Pakistan from Jammu & Kashmir near the city of Zafarwal. It runs through the Districts of Sialkot, Narowal, Gujranwala, Sheikhupura, Nankana Sahib etc. and eventually falls in Deg diversion channel and then into River Ravi near Sharaqpur. Discharge history of Deg Nullah was recorded on 26th September 2014 at Kingra Bridge i.e. 75102 cusecs, while the capacity of nullah is only 17,000 Cusecs.

1.11.4. Bein Nullah

The catchment of Bein Nullah exists in India around 25KM away from Shakargarh, District Narowal. Its length in Pakistan is 48KM. As a result of heavy rainfall in the catchment area, maximum discharge is 143,000 cusecs was observed on 29th July 1961 and it remained constant for 6 to 8 hours. Due to better management, no damage occurred to the village/Abbadies and agriculture land. Ultimate disposal of Bein Nullah is in River Ravi upstream Jassar cantt.

1.11.5. Basantar Nullah

Basantar Nullah originates from India about 35KM to Shakargarh in District Narowal. Maximum discharge of 43,000 cusecs passed on 24th August 1996. No significant damages to any kind of property recorded. The Basantar Nullah merges into River Ravi near Narowal City.

1.11.6. Lai Nullah

The Lai Nullah is popularly known as Nullah Lai which is flowing in-between twin cities of Islamabad and Rawalpindi. The catchment area of Lai Nullah is 234.8KM^2 in which around 161.2 Km^2 is situated in Islamabad while rest of 73.6 Km^2 lies in Rawalpindi . The total length of Nullah is about 30KM, out of which 17KM lies in Rawalpindi . The Lai Nullah originates behind Islamabad City at the foothills of Margalla range and has six major tributaries, in which three streams are originating in the foothills of Islamabad in the higher plain area. The three nullah namely Saidpur Kas, Tenawali Kas, and Bedarawali Kas join just upstream from Kattarian Bridge, at I.J. Principal Road at Rawalpindi, while other three streams i.e. Nikki Lai, Pir Wadhai Kas and Dhok Ratta join the main Nullah in Rawalpindi prior to it finally fell down into Soan River, which is a tributary river of river Indus.

The Lai Nullah is popularly known for sudden rise of flood water and has witnessed of receiving flooding during 2001, 2002, 2003, 2008, 2012 and 2013. However, among the above extreme flood years, the 2001 had been the worst in nature.

Besides some of important Nullahs are also flowing in District Mianwali i.e. Rakka, Darsola and Jabba Nullahs which results localized flash flooding and cause material losses to local communities.

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[6]Global Water Partnership and World Meteorological Organization (2004), "Integrated Flood Management: Case study of Lai Nullah Basin flood problem to Islamabad/Rawalpindi"., p.2

[7]M. Afzal and Qamar Ul Zaman, "Case Study: Heavy Rainfall Event over Lai Nullah Catchment Area", published in Journal of Meteorology, Vol 6, issue 12, page 39.

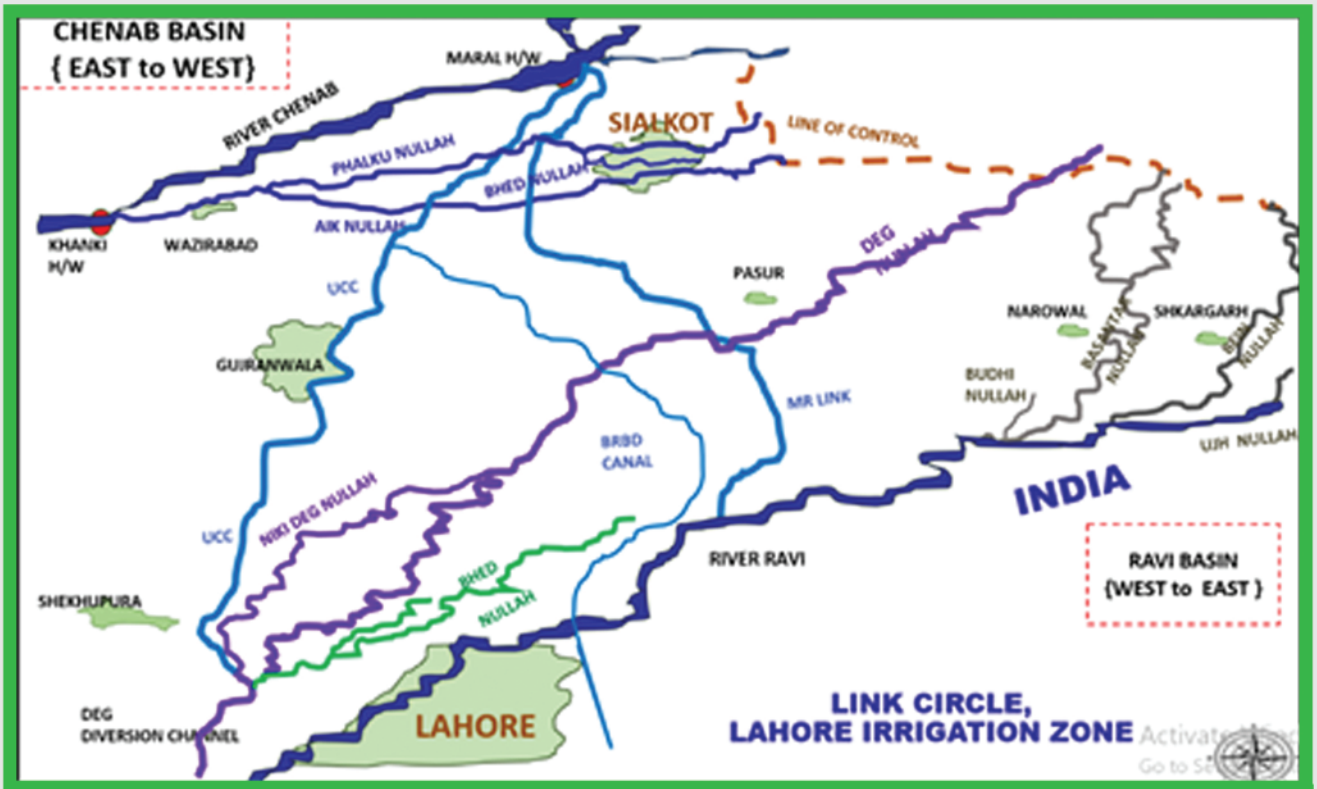

Figure 1.7: Major Nullahs Flowing in Gujranwala Division

1.12. THE HILL TORRENTS

The South-Western part of Punjab is bordered with Suleiman Ranges which covers a length of 360KM starting from Ramak (upper side of Taunsa) to Kashmore (start of Sindh) covering two Districts of Punjab i.e. Dera Ghazi Khan and Rajanpur. While the Eastern drainage body is River Indus. Rainfalls during monsoon months in Suleiman Ranges generate flash floods in down areas (Figure 1.8). The Hill Torrents are locally known as “Rodh Khoie”. These Hill Torrents are 200 in numbers, out of which 13 are major torrents. Whenever heavy raining occurs in the Suleiman Ranges, it suddenly changes into flash floods and badly damage the irrigated lands, crops, houses and public / private infrastructures down in Dera Ghazi Khan and Rajanpur. While on one side, the flash floods destroy the infrastructure in Dera Ghazi Khan Canal / Chashma Right Bank Canal command area, on the other side, the barren land in piedmont area (Pachad area) are deprived off water for agriculture. Mostly these torrents dry up suddenly after the rain stops and their influence is only felt for a few miles below the hills. The torrent water is used for irrigation through a network of diversion and dispersion arrangements by community since centuries. History of hill torrents along with maximum recorded flow discharge of water in Rajanpur and Dera Ghazi Khan Districts is given in table 1.8 and 1.9 below.

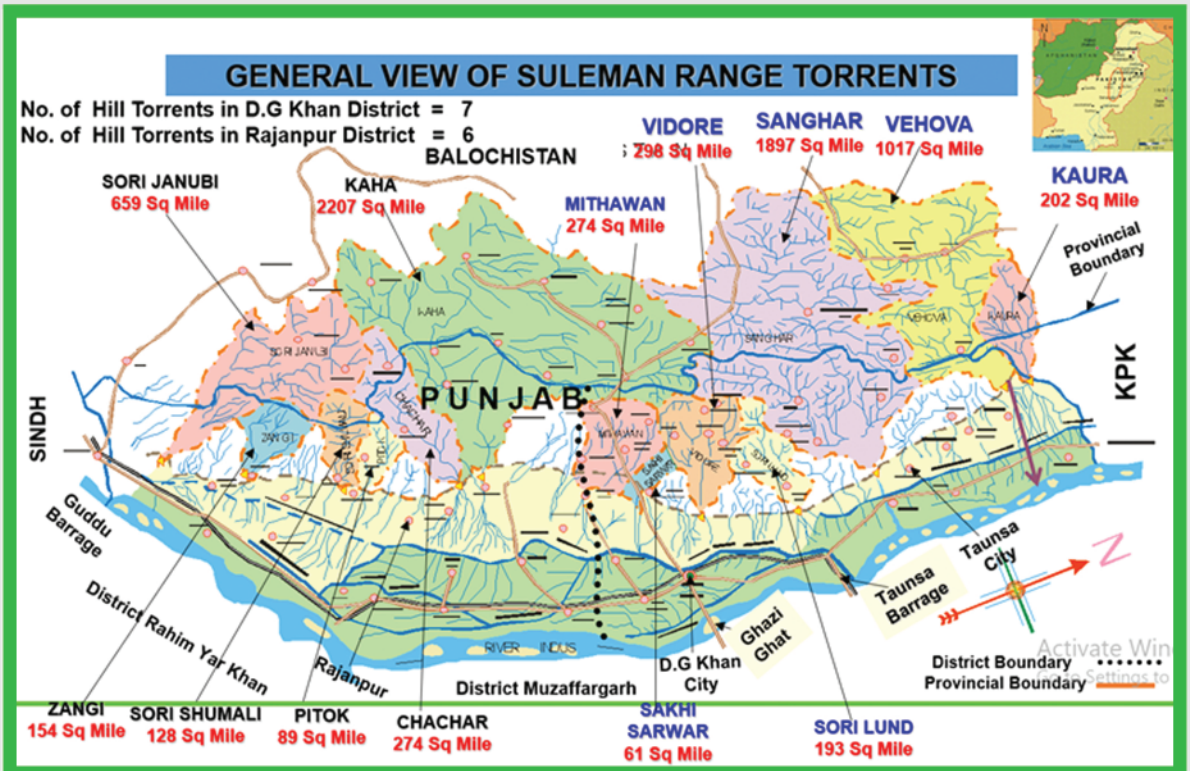

Figure 1.8: General Overview of Suleman Range Torrents

Table 1.8: Major Hill Torrents in Rajanpur District

Sr. #	Name of Hill Torrent	Design Capacity	Maximum Discharge Recorded (in Cusecs)
1	Kaha at Darra	11,850	96,000
2	Chachar at Darra	85,500	65,000
3	Patokh at Darra	23,900	5,000
4	Sori Shumali at Darra	7,713	7,150
5	Zangi at Darra	3,500	4750
6	Sori Janobi at Darra	41,600	4320

Table 1.9: Major Hill Torrents in Dera Ghazi Khan District

Sr. #	Name of Hill Torrent	Design Capacity	Maximum Discharge Recorded (in Cusecs)
1	Kaura at Darra	6,1184	140,000
2	Vehova at Darra	87,200	149,405
3	Sanghar at Darra	139,715	146,300
4	Sori Lund at Darra	97,000	97,710
5	Vidore at Darra	97,000	145,101
6	Sakhi Sarwar at Darra	30,800	32,643
7	Mithawan at Darra	78,000	61,205

1.13. RIVERS AND FLOOD ROUTING MODEL (TIME LAGS)

Flood routing is the technique of determining the flood hydrograph at a section of a river by utilizing the data of flood water flow at one or more up-stream sections. The given model (table 1.10) depicts the major rivers and flood routing depicts the main infrastructure i.e. Headworks, Barrages, Dams on each River of Punjab. It also indicates the average travel time in hours (Time lag) among two points[8] .

Table 1.10: Time Lag of Different Rivers in the Province

Sr. #	Site		Distance Kilometers	Time (Hours)
	FROM	TO		
1	Skardu	Jaglot (Partab Bridge)	-	12
2	Jaglot	Besham	-	18
3	Besham	Tarbela	-	06
4	Skardu	Tarbela	480	36

Sr. #	Site		Distance Kilometers	Time (Hours)
	FROM	TO		
RIVER INDUS				
5	Tarbela	Khairbabad /Attock	40	26
6	Khairbabad /Attock	Kalabagh	161	26
7	Kalabagh	Chashma	58	12
8	Chashma	Taunsa	237	51-72
9	Taunsa	Guddu	208	48
10	Mithonkot	Guddu	95	24
11	Guddu	Sukkur	209	24
12	Sukkur	Kotri	480	78
13	Kotri	Sea	-	27
RIVER JHELUM				
14	Mangla	Rasul	66	17
15	Rasul	Trimmu	255	64
RIVER CHENAB				
16	Marala	Khanki	56	9

Sr. #	Site		Distance Kilometers	Time (Hours)
	FROM	TO		
17	Khanki	Qadirabad	30	6
18	Qadirabad	Trimmu	214	48
19	Trimmu	Panjnad	257	48
20	Panjnad	Mithonkot	-	-
RIVER RAVI				
21	Madhopur	Jassar	-	12
22	Jassar	Ravi Syphon	73	24
23	Ravi	Shahdra	24	24
24	Syphon	Balloki	63	18
25	Shahdra	Sidhnai	158	56
RIVER SUTLEJ				
26	Ganda Singhwala	Sulemanki	106	48
27	sulemanki	Islam	99	42
28	Islam	Panjnad	215	72

1.14. FLOOD VULNERABLE DISTRICTS OF PUNJAB PROVINCE

The districts in Punjab have classified into three categories as high, moderate and low risk districts taking into account the flood as primary hazard.

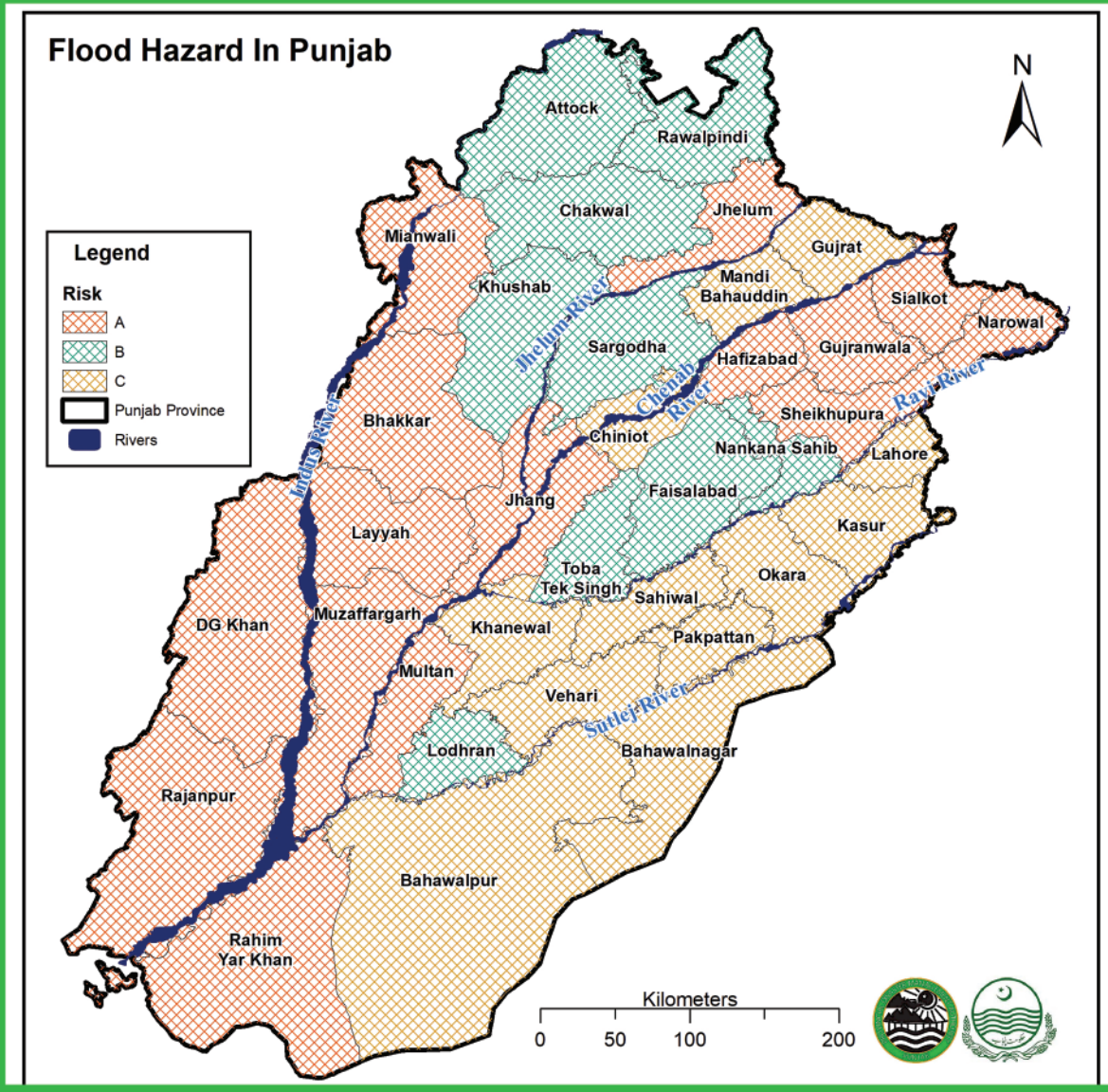

Figure 1.9: Flood Vulnerable Districts of Punjab

1.15. LEARNING FROM PAST MAJOR FLOOD DISASTERS

Flood disasters have occurred frequently in Punjab and have been responsible for enormous losses of life, livelihood and property. Disaster management related to floods is a problem synonymous nationwide. During recent times, Punjab is the province that has suffered from the onslaught of flood disasters in quick succession. The devastating floods of 2010, 2011, 2014 and 2015 resulted in high number of human casualties as well as an enormous loss of property, causing immeasurable suffering to the general public. Frequency of natural disasters is on the rise due to extreme weather conditions and global climate changes. The situation in the prevention of and response to natural disasters have also become more serious and complicated. However, the PDMA, government of Punjab has been tracking the total losses in terms of number of deaths, damage to houses and affected number of villages and their populations which have been summarized as under:

Table 1.11: Historical Profile of Flood Disasters and it's Damages in Punjab Province

Sr. #	Years	Total area affected (in Acres)	Cropped areas affected (in Acres)	Affected people	No of affected villages	Cattle perished	Damages to houses	No. of deaths
1	1973	8,498,440	2,571,924	N.A.	6,672	91,734	2,020	N.A.
2	1975	2,467,000	678,879	1,809,518	3,253	91,734	63,885	25
3	1976	7,814,876	2,145,635	6,330,880	11,013	27,555	76,509	408
4	1977	1,083,109	146,801	580,252	1,441	95	13,807	22
5	1978	3,709,373	905,082	1,626,593	5,173	4,003	58,408	127
6	1980	475,973	163,810	54,318	862	79	15,444	61
7	1981	1,047,549	299,549	648,373	2,071	302	41,259	68
8	1982	58,402	25,168	25,694	242	-	3,177	-
9	1983	469,540	127,277	65,480	644	65	3,546	3
10	1984	272,910	141,921	52,989	251	66	6,789	3
11	1985	55,973	12,885	19,805	171	16	2,953	26
12	1986	1,177,872	535,867	793,797	1,725	16,323	23,990	37

Sr. #	Years	Total area affected (in Acres)	Cropped areas affected (in Acres)	Affected people	No of affected villages	Cattle perished	Damages to houses	No. of deaths
13	1988	3,462,534	1,293,397	2,881,300	4,035	29,665	122,142	234
14	1989	1,020,046	391,170	146,062	2,124	304	6,384	30
15	1990	112,960	15,455	14,653	416	133	3,620	3
16	1992	5,788,330	2,843,497	4,121,010	7,435	39,126	196,902	435
17	1993	811,500	169,782	264,022	1,375	75	300	16
18	1994	1,227,524	351,305	251,215	2,154	210	19,002	84
19	1995	3,449,486	1,381,805	1,638,131	4,912	574	41,068	177
20	1996	1,974,309	1,096,957	1,272,499	3,769	1,105	24,273	196
21	1997	3,331,874	1,360,542	2,085,585	5,891	864	49,572	250
22	1998	133,141	2,305	1,148	111	N.A.	148	N.A.
23	1999	7,749	234	248	42	40	152	20
24	2003	287,551	175,995	7,980	246	163	1,066	48
25	2005	418,045	54,628	331,282	716	58	9,228	2
26	2006	897,246	203,937	301,437	1,383	141	7,357	127
27	2007	244,070	7,312	172	12	40	66	57
28	2008	670,117	306,177	110,308	570	6	2,581	51
29	2010	3,471,109	1,914,104	5,038,992	1,810	3,572	497,700	262
30	2011	136,758	125,513	26,393	335	59	1,284	4
31	2012	1,960,000	473,998	887,345	1,512	898	25,556	60
32	2013	1,950,000	745,655	1,200,000	2,946	81	12,455	109
33	2014	2,410,000	-	2,470,000	3,484	737	83,593	286
34	2015	3,410,000	-	4,450,000	558	-	16,374	35
35	2017	9,345	-	820	132	-	125	172

Source: Data compiled from various sources including (a). Flood Mitigation Manual of NDMA (2010), (b). National Disaster Response Plan of NDMA (2019) and (c). PDMA Punjab 2010 to 2017

Due to huge geographical size of the flood/rain affected regions, the exact nature of damages cannot be properly quantified in shorter period of time through manual field surveys alone. The inaccessibility of disaster affected areas further adds to the complexity of relief and response work. In such circumstances, the use of Remote Sensing tools with the provision of satellite imageries of the flood prone areas was valuable techniques to generate and establish a quick footprint of the flood disaster. It provides crucial input for the planning of relief supplies by assessing damages to transport networks, finding escape routes and potential shelter sites for displaced people. For a prolonged disaster, such as the Pakistan floods of 2010 and 2014, satellite based monitoring of the affected areas was very helpful in identifying the extent and dynamics of the disaster. Due to the revisit capability of earth observation systems, it can efficiently provide rapid mapping products of disaster hit areas. The main challenge, however, is the limited coping capacity of the government, in financial terms, to provide relief to the people against the total loss. The need of the time is to engage the private sector in an institutionalized manner, for Disaster Risk Financing (DRF).

Moreover, the network of PDMA has to be further strengthened through an active involvement of Dehi Markaz Maal, established by the Board of Revenue Punjab in each Patwar Circle. These offices may register the active volunteers (male and female), train and equip them to create resilience against various disasters especially floods under the auspices of PDMA Punjab.

SECTION TWO

PRE FLOOD PREPAREDNESS AND MITIGATION

2.1. STRATEGY FOR CURRENT MONSOON FLOOD EMERGENCIES

The PDMA with the support of District Disaster Management Authorities and other Government Department at National and Provincial Levels have devised the following strategy to prepare for any emergency situation arising with the arrival of Monsoon torrential rainfall and floods.

2.2. TAKING SUPPORT FOR THE PMD's MONSOON WEATHER OUTLOOK

With the start of Monsoon season, the PDMA closely liaison and coordinate with the Flood Forecasting Division of Pakistan Meteorological Department at Lahore for getting an updated Monsoon outlook. The PMD itself also updates weather outlook weekly as soon as they observe any unusual changes in the weather pattern and Monsoon clouds. They share it on their website, disseminate to all concerned department and upload on the social media for wider dissemination to inform the general public.

2.3. SPECIFYING ROLES AND RESPONSIBILITIES OF KEY LINE DEPARTMENT

For effective, timely and swift response to flood disaster/emergency, coordinated efforts are required to maximize energies by sharing responsibilities and resources to cope up with the flood disaster. In this regard, the PDMA is closely working with key line departments on regular intervals before and during the monsoon season to ensure preparedness and safety measures in respect of heavy raining and flood management. Some of the key line departments with their specific role in combating flood disaster have been mentioned in the table below:

DEPARTMENT	MAJOR/ SPECIFIC TASKS
National Disaster Management Authority	• Coordinate response and relief efforts during the flood disaster situation • Resource mobilization and provide immediate flood relief fund • Build capacities including trainings, conducting mock drills like Simex exercises involving all government stakeholders • Coordination and provide technical backstopping • Support in arranging relief items during flood emergencies

DEPARTMENT	MAJOR/ SPECIFIC TASKS
District Disaster Management Authority	• Prepare, review and update district level monsoon contingency plans • Organize mock drills and ensure active participation of all stakeholders before the onset of monsoon season • Facilitate community training and awareness programmes for effective flood emergency response • Set up, maintain, review and upgrade the mechanism for early warnings and dissemination of proper information to public • Conduct damage and needs assessment and ensure its provision working with PDMAs and humanitarian agencies. • Support in safe evacuation of flood affectees and arrange relief camps and ensure safe return after retreat of flood water
Flood Forecasting Division	• Collect the meteorological data and preparation of daily weather forecast. • Obtain data of precipitation from gauging stations and stream gauging stations. • Process, analyze data/information for preparation of flood forecasts, stream-flow and discharge forecast
Primary & Secondary Healthcare	• Organize and equip medical mobile team to the place of disaster at shortest possible time • Ensure sufficient provision of medicines and medical supplies for disaster victims. • Review inventory level of medicines, vaccine and replenish stores. • Outreach and Community Based Activities, which focus on immunization, sanitation, malaria control, maternal and child health, and family planning.
Agriculture	• Supervise and coordinate actions to save stocks, equipment machinery etc. from damage. • Placement of the requisite machinery and material at safe locations near the vulnerable points for emergency repairs. • Lay down procedure for distribution of inputs to flood affected farmers for sowing of next crop. • Select safer and strategic points in flood prone districts for stock of seed and fertilizer
Irrigation	• Irrigation department has to work in coordination with other civil authorities to take care of the encroachments on embankments and spurs. • Continuous monitoring of the water levels in the major water channels and dams. • In case of rising discharge rates, the Irrigation department issues early warnings to PDMA and other districts about such discharges. • Protection of barrages, settlements, canals, bunds, spurs and communication infrastructure such as railways, highways etc, has to be ensured. Vulnerable embankments have to be properly protected and strengthenede

DEPARTMENT	MAJOR/ SPECIFIC TASKS
	• The department must maintain a state of readiness and ensure the availability of stones and other flood fighting materials in proper stocks prior to the monsoon season. • Preparation to reinforce or breach a section in case of any emergency should be in place. • The Irrigation personnel are deputed at head works and vulnerable points for timely warning equipped with wireless sets (base & mobile) to communicate the discharge rates. • Irrigation department maintains 19 breaching sections throughout the Province. An increase in water levels can be managed by diverting excess water into the breaching sections.
Cantonment Board Lahore	• Cleaning and De-Silting of road side drains, removal of garbage, repair/ maintenance of nullahs and roads in the cantonment area. • Arrangement to constitute task force to combat any emergency. • Preparation of inventory of flood fighting equipment available.
Transport Department	• Survey and inspection of the vulnerable sites. • Completion of all civil work before the commencement of rainy season. • Review to make transport arrangements for flood affectees in case of emergency.
Construction & Works Department	• Completion of all repair work before the commencement of rainy season. • Review and update inventory of material and equipment. • Plan and position adequate bridging equipment near vulnerable points/location.
Livestock and Dairy Development Department	• Assist in saving livestock, reserves of dry fodder and stock of animal feed. • Undertake curative and prophylactic vaccination, control of parasitic diseases and treatment of sick and wounded animals • Stockpile medicines, vaccines and maintain proper inventory levels.
Rescue 1122 Department	• Cordinate and conduct regular monsoon-floods preparation meeting in the districts with all line department, beind of the DDMA • Placement of requisite machinery and material at safe locations near the vulnerable points. • Preparation of inventory of flood fighting equipment available. • Devise the mechanism to hold mock exercise/drills for handling the future flood related disaster.

Home Department (Civil Defence, Police)	• Carry out periodic servicing and repairs of tele-communication system • Take security measures at evacuation points, evacuated areas, relief centers/stores • Direct traffic and organizing alternate road connections • Place men, material and equipment at the disposal of the local administration on demand. • Train the personnel/ provide to the Army for training in operation of motor boats, first aid and lifesaving operations.
Local Government & Community Development Department	• Properly check the de-watering pumping sets available with concerned local Governments for de-watering the rainy/flood water from the low lying areas of cities/towns. • Ensure repair of faulty well in time. • Placement of de-watering sets at low lying areas
Information and Culture Department	• Undertake a continual campaign of informing the population about facing the flood disaster situation. • Establish and activate flood information cell in the flood warning centers. • Use of electronic and digital media for raising awareness and provide real time reliable information from concerned government department to general public
Food Department	• Ensure protection of storage godowns from floods and rains. • Select safer and strategic points in the vulnerable districts for stockpiling of food commodities. • Ensure availability of adequate food stocks.
Social Welfare Department	• Coordination with NGOs/Aid Agencies in provision of relief goods to flood victims. • Assist the local administration in rescue, evacuation and relief operations. • Extend guidance and counselling to flood victims.
Housing Urban Development & Public Health Engineering Department	• De-chlorination of all wells in the flood affected areas. • Sanitation in flood affected area/Relief Camps. • Review the plan for regulation of water supply.
Army / 4 Corps	• Survey and inspection of flood protection works • Prepare and activate breaching sections on request from • Irrigation Department • Organize medial aid and evacuation of flood victims on request of the Civil Administration.

DEPARTMENT	MAJOR/ SPECIFIC TASKS
Private Sector including PRCS	• Provide all necessary trainings, conduct drills/exercises and provide necessary equipment to the local DRMCs. • Facilitate local authorities in emergency relief operations (search & rescue, establishment of evacuation centers, food distribution to displaced, provision of health services etc.) • Mobilize emergency response teams available at district, provincial or national level for crises management. • Assist in collecting damage and need assessment data.
Volunteer Network	• The office of Civil Defence assists in the evacuation of people and their household properties from the disaster affected areas. The office engages a large number of volunteers for search, rescue, evacuation, and disbursement of relief goods. These volunteers generally are known as "Razakars" and are usually trained in swimming, basic rescue techniques, first aid, etc. Razakars build their skills in simulation and mock exercises. The Civil Defence collaborates with Punjab Emergency Services (Rescue 1122) in sophisticated search, rescue and evacuation operations. • The Civil Defence Department organizes mobile squads of Razakars and scouts in collaboration with local wardens and scout organizations to assist local administration/army, Rescue 1122 in evacuation and other disaster response activities. Razakars manage and utilize generators, searchlights, and other lifesaving equipment. Razakars that know how to swim and dive are utilized for specialized water rescue. Razakars provide first aid to injured victims before transporting them to hospitals. These volunteers also assist the fire brigade in rescue and Health department's representatives in the treatment of injured victims. The Civil Defense also assists the District Administration and Police in setting up an information system for members of the public whose relatives, friends, and family members are missing.

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.

2.4. STANDARD OPERATING PROCEDURES FOR MONSOON RAINFALL AND FLOOD EMERGENCIES

2.4.1. SOPs for Monsoon Rainfall and Riverine Flooding

In order to prepare for receiving heavy rainfall followed with flooding in the rivers, the

PDMA has circulated notification on March 10th, 2022 to all Deputy Commissioners/Chairpersons of DDMAs for making necessary arrangements at their levels to prepare for an effective emergency response. The following SOPs have been circulated

I. Convene meetings of the District Disaster Management Authority to discuss and review the preparedness for taking timely relief and rescue measures. The loose ends, if any, should be tied up. Meetings should be held before the end of March, 2022.

II. Inspect the Flood Protection Bunds for proper repair/maintenance by the concerned departments.

III. Properly check the de-watering sets available with the concerned Local Governments i.e. Metropolitan Corporation/District Council/Municipal Corporation Municipal Committee for de-watering the rainy/flood water from the low lying areas of cities/ towns. Ensure repair of faulty pumps well in time.

IV. Preparation of inventory of flood relief equipment available in the District.

V. During flood situation, rescue people from drowning in the strong currents. The Rescue 1122 is specifically trained in water rescue operation and moreover they have specialized equipment and trained divers and boats. Similarly, in the case of collapsed buildings or structures during heavy monsoon rains and urban flooding, Rescue 1122 is equipped with heavy machinery to cut through heavy debris. Rescue 1122 is well trained in setting up medical camps for the provision of emergency medical treatment. These camps are set up by Rescue 1122's doctors and paramedic staff.

VI. Survey to enlist all private boats so that they can be requisitioned and made use of, if required, for rescue and relief operation in case of any flood eventuality. Boats available with Rescue-1122 must also be made serviceable.

VII. Devise mechanism to hold mock exercise/drills for handling flood related disaster keeping in view the worst case scenario.

VIII. Identification of potential areas and sites to conduct the proposed drills/mock exercise.

IX. Identification of sites for establishment of relief camps at safe places during floods.

X. Devising of transparent mechanism for monitoring infrastructure and flood water management. Furthermore, arrange transport where necessary for carrying persons requiring emergency medical treatment from the emergency area to the nearest hospital or health care unit having arrangements for emergency medical care and treatment.

XI. Ensuring availability of medicines and readiness of the District Hospitals, THQs, RHCs and BHUs.

XII. Arrangement for dealing with cases of stranded women/children, cases of violence & abuse and prioritization of needs of women, children and vulnerable groups in relief & response efforts.

XIII. Update the existing flood contingency plans optimizing available resources to meet any eventuality due to flood/ heavy rains. The plans must be comprehensive and must include detailed instructions to evacuate populations from the vulnerable points during the time available between the early warning and onset of the event, without exposing the populations to any hazards. The contingency plans must be furnished to this Departments by 25th March, 2022

XIV. Collect, compile, maintain and analyze emergency response data and statistics relating to emergencies and to use it for research and prevention of such emergencies.

XV. Appoint an officer of BPS-17 or above in the Flood Warning & Control Centre/DEOC after receipt of warning for medium or higher level flood till the threat is over, who will be available round the clock to ensure rapid communication, exchange of information and quick response to combat or deal with an emergecy.

XVI. Formations of a task force with association of Rescue 1122 at the district level consisting the representative of WAPDA (Electricity) WASA (where it exists), concerned local Governments, Irrigations, Highways, Civil Defense, Buildings Health and Livestock's departments, etc. for tackling any situation actively and effectively. Moreover, to mobilize the community emergency response teams through enlistment, training, coordination and supervision of volunteers to assist the service in safety promotion and management of emergencies during the monsoon season.

XVII. Arrange submissions of loss/damage reports to the Disaster Management Department / PDMA Punjab at Lahore, on daily basis during the flood season.
XVIII. Intimate any other necessary actions and precautionary measures in connection with pre-flood arrangements.

2.4.2. SOPs for Urban Flooding

I. Prior to the monsoon season, ensure de-silting of nullahs/river channels, passing in the urban areas.

II. The WASA Head Office will ensure the establishment of Monsoon Control Room before the start of monsoon season. This control room will fully functional on 24/7 basis to monitor heaving raining and flood emergency situation.

III. Formation of flood control room duty roster including members from all government department working in the urban setup.

IV. Closely liaison with the PMD, PEOC and respective DEOCs to get early warnings and take appropriate actions.

V. The WASA will ensure operational integrity of the equipment and sewerage pumping stations. They will also be involved in de-watering of flood surges through water pumps.

VI. WASA will also ensure the presence of all staff specifically staff working on the emergency drainage centers and other key pumping installations.

VII. During and after the flood disaster, clearing debris from roads and streets and removal of sediments and silt deposits to ensure smooth flow of water and further eradicate environmental pollution after flood retreat.

VIII. Close liaison of WASA with WAPDA to ensure uninterrupted electric supply at Disposal/Lift Stations.

IX. Close liaison with the traffic police to keep traffic flow open and avoid congestion.

X. Working with the Pak Army and Rescue 1122 Department to arrange boats and rescuers for safe evacuation and transportation to safer relief camps.

2.5. DEVELOPMENT OF THE DISTRICT LEVEL DISASTER MANAGEMENT AND RESPONSE PLANS

Every year, before the commencement of Monsoon season, the district disaster management authorities prepare their respective disaster risk and response management plans and share with PDMA on regular basis with updated information and data about the resource inventories and preparedness measures for the monsoon season. This is routine yearly practice, which PDMA conducts to revise provincial monsoon contingency plan and know about the latest available resources and demands at district level. To further develop coherence among all district level plans, the PDMA circulates standard formats, on which the respective DDMAs prepare their plans and share with PDMA.

2.6. SETTING ALERT LEVELS

For activation of the Emergency Operation Centers (EOCs) at their respective levels, the PDMA Punjab has established certain alert levels based upon the threat perception. These alert levels are as follows[10].

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 responsibilities 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's inspections and necessary works/action shall be carried out as mitigation measures.

2.6. SETTING ALERT LEVELS

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 LDMA (Tehsil level) control rooms be made operational 24/7 and ensure availability of all required (available and additional) resources for on call mobilization and monitor the situation on 6 hourly bases. 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 issue EW to all stakeholders and "High Alert" for the district to ensure that all additional HR and material resources including volunteers have reported to their assigned duties, and all resources for evacuation and disaster management have been mobilized as per DDMP. All emergency (Health, Fire, and Rescue 1122, MC etc.) facilities shall work 24/7 with full staff strength. DDMA shall monitor the situation on hourly basis.
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.

2.7. ESTABLISHMENT OF THE FLOOD CONTROL ROOMS AT PDMA AND DDMAS

The PDMA has established Provincial Emergency Operation Center (PEOC) since it came into being in 2008. The PEOC is mainly responsible for command, control and communication throughout the year on 24/7 basis. However, with the funding support of World Bank through "Disaster and Climate Resilient Improvement Project", the PEOC has been revamped and provided with state-of-the-art high tech equipment. The PEOC is fully operational and acts as role model for the rest of PEOCs in the country (Figure 2.1).

The stakeholder departments of PEOC would base their decisions on a rapid assessment of the disaster. This assessment carried out by the district representatives of different departments would be shared among all participants at the PEOC. The representative of Irrigation Department would, in case of a breach, inform all stakeholders of the current discharge rate in the affected water channel and the estimated area that would be inundated by water flowing out of that breach. This rapid assessment should follow an assessment of the resources that would be required to rescue the affected population, evacuate the vulnerable communities, and provide immediate relief to the victims of the disaster.

Besides, with all necessary gadgets, the PDMA has established District Emergency Operation Centers (DEOCs) in 36 districts of Punjab (Figure 2.2). All of the DEOCs are provided with the following facilities:

- Dedicated Staff as per the magnitude of the disaster.
- Duty roaster of the staff.
- Two dedicated telephone lines.
- Dedicated Fax.
- Wireless Internet and Email or any other source of communication.
- Power backup.

Figure 2.1: Flood Control Room/PEOC at PDMA Lahore

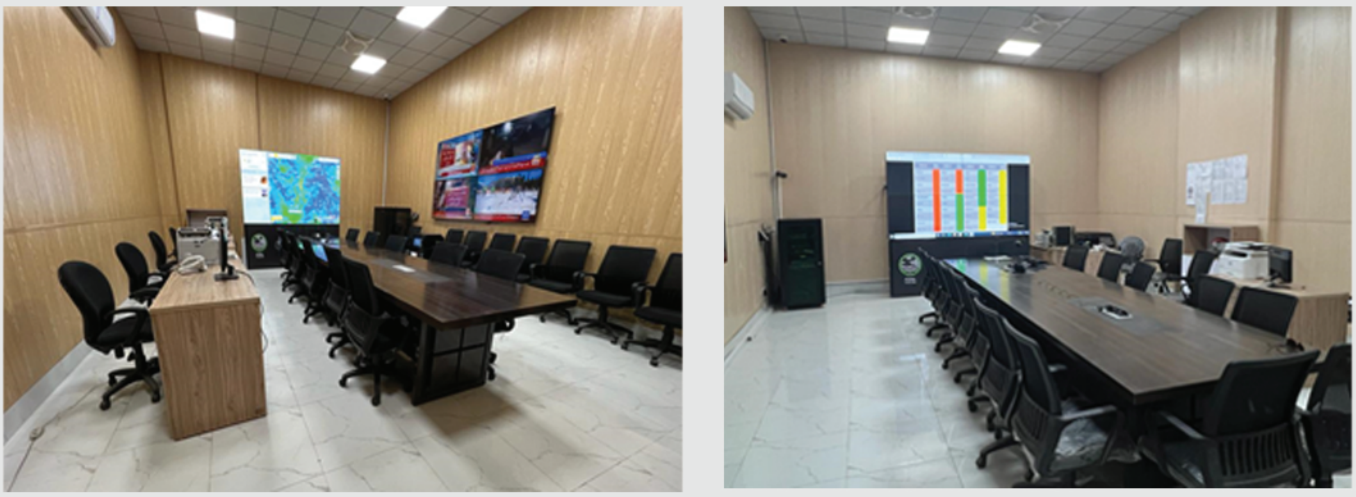

Figure 2.2: District Emergency Operation Centers Established in all Districts of Punjab

2.8. ESTABLISHING DUTY ROASTER AT THE FLOOD CONTROL ROOM/PEOC

The PDMA has already established a Duty Roaster to meet the unusual raining situation and flood emergencies. A Director level officer has been designated as overall incharge of the flood control room. The team comprised of representatives from PDMA, Agriculture, Livestock, Irrigation, Local Government, Education, Health, C&W, Social Welfare Department and WASA. The deputed team shall work in different shifts on 24/7 basis to fully operationalize the flood control room. The team shall perform the following duties

I. Data collection of rain gauges from Met Department and river gauges/discharge, flood situation from Flood Forecasting Division in Punjab.

II. Generate weather/flood alerts and its dissemination to all relevant stakeholders on real time basis.

III. Monitoring of electronic media/video walls with respect to any type of disaster and subsequently sharing and confirming the information from concentered District Administration to take remedial measures.

IV. Ensure information dissemination through WhatsApp groups i.e. (DRF/DEOC, PDMA Info Desk), SMS portal as well as prepare consolidated reports of any type of natural calamity.

V. Close coordination with the DEOCs for information sharing and follow-up.

VI. File/email management of all incoming and outgoing letters/emails related to disaster/natural calamity for maintaining office record.

VII. Compilation and consolidation of losses ad damages reports due to flood/rainfall/thunderstorm/lightning strike and drowning cases etc. for onward circulation to the conceded departments

2.9. STRENGTHENING EARLY WARNING SYSTEM

2.9.1. Setting Early Warning System Protocols

The following early warning protocols of PEOC and DEOCs have been established:

Receipt of Warning	The early warning is received from resources like PDMA, Pakistan Metrological Department (heavy rains/wind or storms), Hydrological Department WAPDA Mangla Dam, (flood/dam outflow), Rescue 1122 (Road Accidents, Fires, Building Collapse, Drowning), Civil Defense & police (riots, violence, terrorist activities), Health (epidemics) through emails, phone calls & SMS depending upon nature & the gravity of the warning.
Functions of Control Room	· Information collection & dissemination · Establish coordination among departments. · Communicate with the concerned department (depending upon the nature & gravity of the warning). · Resource dispatching and tracking. · Warning distribution among government departments, Public, & media. The information received at the district control room is dispatched to the concerned department (focal person/district head) through email, SMS or phone call depending upon the severity of the warning after getting clearance from chairman DDMA.
Mode of Communication of Early Warning to Relevant Population	The relevant warnings to the concerned population are passed in three phases • ***Phase 1*** Notices are served through Patwari and Gardawar to the concerned residents of the vulnerable area regarding alternate arrangements for expensive items/goods in case of emergency evacuation. • ***Phase 2*** Mock exercises and drills are conducted through relevant departments regarding evacuation. • ***Phase 3*** In this phase, the warnings are issued through sirens, announcements through loudspeaker/megaphone and electronic media when DDMA issues high alert of level B.

2.9.2. Use of IT & GIS for Effective Early Warning System in PDMA Punjab

Flood Simulation Model

PDMA devised and now is expertly using the flood inundation model to simulate flood extends in accordance to the given water level for upstream and down-stream of the selected rivers (Indus, Jhelum and Chenab) across the twenty most vulnerable districts of Punjab. From the pre-defined scenarios at different water levels (Low, Medium, High and Supper Flood), it highlights the area

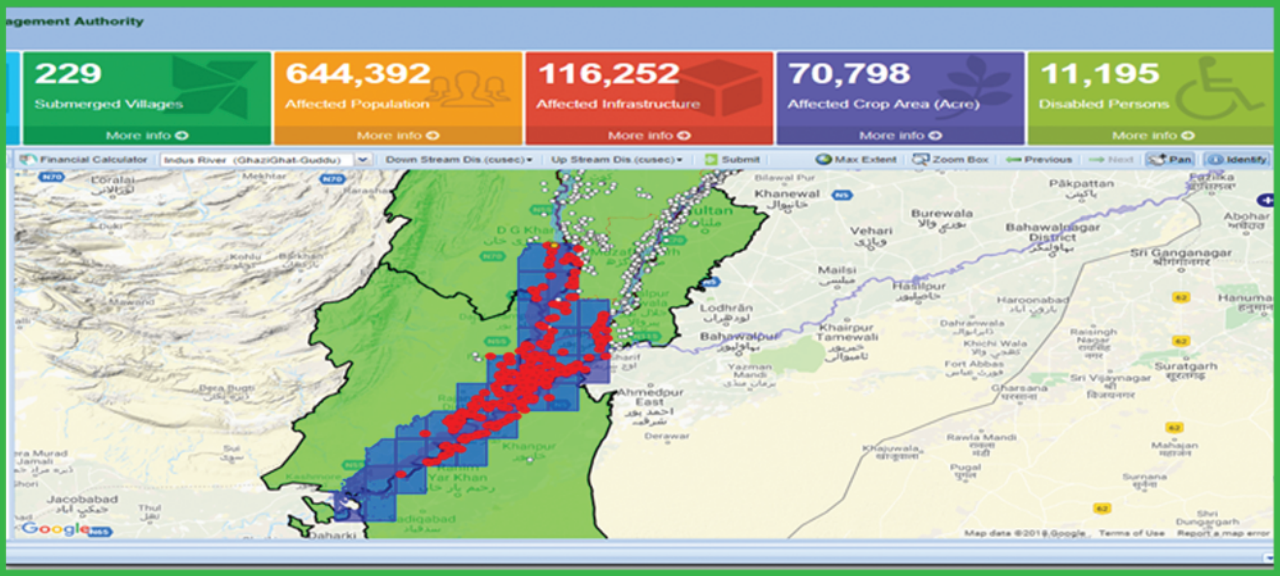

Figure 2.3: Flood Simulation Model

likely to be inundated and identifies the villages that fall in the hazard zone. Moreover, the socio-economic data collected by PIU-PDMA, the statistics and location of the population, livestock, buildings, infrastructure, agricultural land area, etc., susceptible to flooding could be displayed for the effective and timely response. This application was also beneficial in generating early warning alert as it could pinpoint all the survey respondents (whose cell phone numbers were readily available in the database) likely to be affected. Hence pre-flood warning alerts, in the form of SMS were sent to the targeted population.

2.9.3. SMS Broadcasting Module

This is integrated with the flood inundation model for sending the awareness messages and early warnings to the population residing in the affected Tehsils and UCs. The SMS will be sent through major telecommunication companies operating in the area, and delivery logs of all messages shall be maintained (Figure 2.4). Moreover, the PDMA has WhatsApp group on which the PDMA after receiving flood alerts and early warnings, issue messages through WhatsApp group to all registered in the database.

The use of TVCs on electronic and digital media found very effective tool for issuing early warning dissemination and create public awareness about taking appropriate preparedness measures to respond flood emergencies effectively.

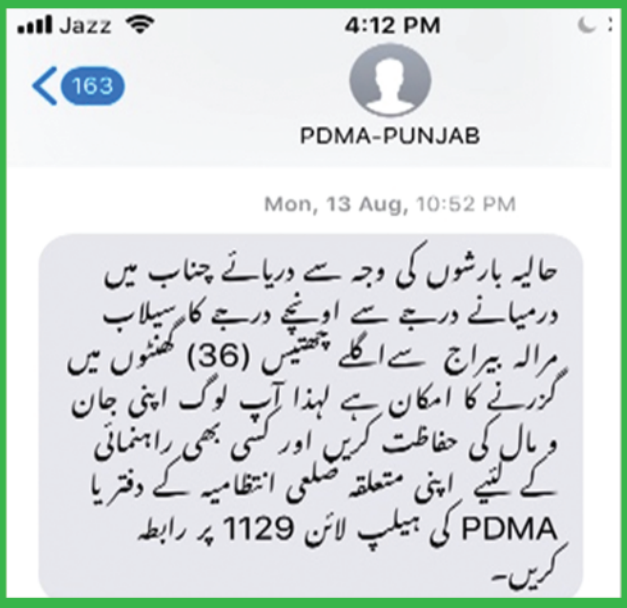

Figure 2.4: Dissemination of SMS and WhatsApp Messages

2.10. DESILTING FROM MAJOR NULLAH/STREAMS

Before the Monsoon season, the respective department including WASA, MCs and PID involve in desilting important nullahs both in urban and rural areas to provide free flow of water during rainy season and flooding.

2.11. FLOOD PROTECTION BUNDS

The Annexure I given at the end of the plan shows the vulnerable critical points and protection bunds. Owing to the rainfalls throughout the year and natural wear and tear, the physical condition of these structures undergo changes making them more vulnerable. Therefore, the respective department have careful watch on these critical points and make necessary repairing to strengthen the bunds before the onset of monsoon season.

2.12.IDENTIFIED BREACHING SECTIONS

Breaching Sections are provided in order to escape apart discharges from the bunds at pre-determined sites while keeping in view the safety of major hydraulic structures like Headworks / Barrages/Bridges and main cities during the exceptionally high flood. Breaching section are operated by the constituted committees headed by the respective Deputy Commissioners.

There are total of 19 breaching sections over the rivers flowing in Punjab. Out of which, 13 are operated by the Irrigation Department, 04 by the Pakistan Railway and 02 are operated by the NHA/C&W Department respectively. In case breaching required due to high level flooding to save vital infrastructure and cities, it may on the other side can cause havoc to the communities living near the breaching points. However, during the monsoon

season, the district administration remained vigilant to quickly evacuate these populations and their livelihood assets to safer areas.

2.13. PREPAREDNESS MEASURES AT THE COMMUNITY LEVEL

The PDMA Punjab in collaboration with the Punjab Emergency Service Department (Rescue 1122) and World Food Programme (WFP) have formulated series of training programmes commonly known as "Community Emergency Response Training (CERT)" for the community volunteers to prepare them for emergencies and disasters.

At the Rescue 1122 Department level, they are still continuing to impact trainings at Tehsil levels to form Community Emergency Response Teams to support local administration and Rescue 1122 for emergency handling as well as provide support to government department for any special events. At present, they have formed 5591 Community Emergency Response Teams and total number of rescue scouts registered are more than one million throughout Punjab (Annexure II shows the district wise CERT volunteers) .

TOTAL NO OF CERTS	TOTAL NUMBERS OF UNION COUNCILS CERT TEAM COVERED	TOTAL RESCUE SCOUTS REGISTERED	TOTAL RESCUE SCOUTS TRAINED ON CADRE
5,591	3,881	1,052,309	148,930

Table 2.1: Community Emergency Response teams available with Punjab Emergency Service Department (Rescue 1122)

Besides the above trained volunteers registered with the Rescue 1122, there are around 4777 trained volunteers registered with their respective District Administrations also[12] .. Out of total of 4777 volunteers, there are 4348 males and 432 females trained volunteers registered with the District Administration (Annexure III shows the district wise volunteers registered with the DDMAs).

Lastly, the PDMA together with the Revenue Department is actively working on establishing Revenue Facilitation Centers (Dehi Markaz Maal) at Mouza level. Having five working principles,

Figure 2.5: Glimpses from the CERT Trainings

the VERFCS facilitation centers, will work for village emergency reporting, loss of livelihood reporting and facilitation center during any crises situation (Figure 2.6).

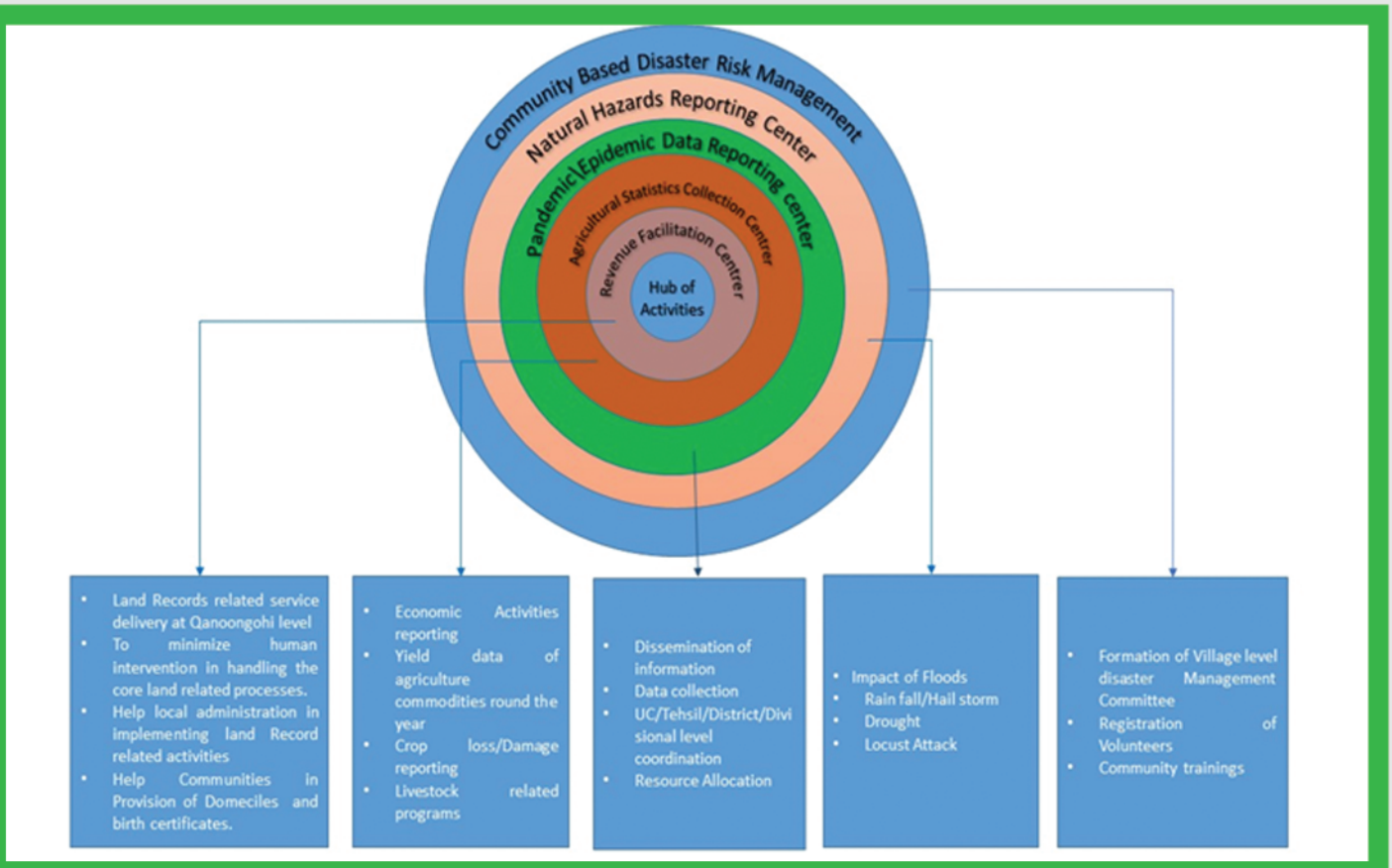

Figure 2.6: Working Principles of the Dehi Markaz Maal

2.14. ACTIVITY TIME FRAME FOR MONSOON FLOOD SEASON 2022

Table 2.2 below depicts the major activities planned for monsoon flood season. The PDMA Punjab shall share the activity timeframe with all 36 DDMAs keeping in view the pre-flood arrangement to deal with the flood emergencies.

Table 2.2: Activity Time frame for Monsoon Season

S. #.	Activities	March	April	May	June	July	August	September
1	Provincial Monsoon Contingency Plan District Disaster Response Plan			Working on draft on plan by the PDMA after submission of the district plans	Finalize the MCP-2022 and its printing by PDMA			

S. #.	Activities	March	April	May	June	July	August	September
2	District Disaster Response Plan			All DDMAs to submit by 15th May				
3	Departmental Contingency Plans			All Stakeholder Departments 15th May				
4	Mock Exercises			PDMA + All DDMAs + Rescue 1122 1st Mock Exercises in May	PDMA + All DDMAs + Rescue 1122 on 2nd Mock Exercise in June			
5	DDMA Meetings	All 36 Days DDMAs: Every Month and more frequently during the ,monsoon season rainfall and flooding situation						
6	Rationalization and Prepositioning of Stocks			By all DDMAs on or before 30th May				
7	Constitution of District Inspection Committees		All DDMAs: 10th April	PDMA + All DDMAs 1st May	PDMA + All DDMAs by 15th June to 15th October			
8	TPV of District Flood-Fighting Equipment				PDMA + All DDMAs by 15th June to 15th October			

S. #.	Activities	March	April	May	June	July	August	September
9	Pre-Qualification of Vendors for Food Hampers and Transportation				PDMA + PMD (FFD) Lahore + PID 15th June to 15th October			
10	Operationalization of Control Rooms (PEOC + DEOC)				1st Week of June by PMD, PEOC and DEOCs			
11	Establishment of Flood Forecasting Center			PMD (FFD) by 10th May				
12	Monsoon Weather Forecast Release	Year round activity. Reports vis-a-vis Monsoon Season to be submitted by 15th April						
13	Inspection of Flood Protection Bunds	Year round activity. Reports vis-a-vis Monsoon Season to be submitted by 15th April						

I. In addition to the above mentioned activities, the following pre-flood arrangements are also mandatory at administrative levels.
II. Details of human resource, their roles and responsibilities, machinery, equipment, gadgets and even their operational integrity.
III. DDMAs are responsible to ensure sufficient stock of materials and machinery are available at vulnerable points.
IV. Communication & Works Department is responsible to prepare the Contingency Plan and to keep their infrastructures (Roads and Bridges Network) functional especially in flood season as per SOPs.
V. Food Department in consultation with DDMA identify sites for safe storage of stocks and devise a mechanism to shift the stock at points where needed.
VI. Health and Livestock Departments are to ensure provision of medicines, vaccines and Wanda in flood prone areas / camps accordingly.
VII. Coordination meetings with Pak Army, PDMA and NDMA, Rescue 1122 officials are held, for better and quick response during the flood season.

2.15.CONDUCTING FLOOD MOCK DRILLS AND SIMULATION EXERCISES

With close liaison with the respective District Administrations, the PDMA Punjab ensure to conduct regular flood drills and simulation exercises by involving all Government key emergency response organizations and flood affected communities. The Rescue 1122 at the district level take the lead to conduct these exercises twice a year before the onset of Monsoon season. While PDMA Punjab regularly visit to various drills to assess the procedures of conducting mock drill; assess areas of improvement; and monitor role and responsibilities of organizations involved in the process. These drills and simulation exercises found very useful in raising awareness and involving the local government, community level volunteers and general public to develop self-reliance and to support each other for effective flood emergency response.

2.16. DISTRICT LEVEL RESCUE AND RELIEF EQUIPMENT INVENTORY-2022

Each year, the PDMA Punjab updates resource inventories with the support of all respective District Administrations and relevant department. The Annexure IV at the end of this plan shows the available resources in each of the district. Besides, PDMA has two Humanitarian Response Facilities (HRF) equipped with all emergency response equipment, the food and non-food items. These Warehouses are situated in Lahore and Muzaffargarh District. The detail inventory has been explained in section three of this plan.

SECTION THREE

POST FLOOD RESPONSE, RELIEF AND REHABILITATION PLAN

3.1. ACTIVATION OF THE PROVINCIAL EMERGENCY AND DISTRICTS EMERGENCY OPERATION CENTERS AT PDMA AND DDMA LEVELS

The most critical part of PDMA's scope of work is to provide a platform for all provincial and district levels stakeholders to come together, planning strategies and respond to disasters. PDMA is responsible for spearheading government response and acting as a hub to manage the coordination of all stakeholders at the district, provincial and national levels during disaster response. When flood disaster strikes, the PDMA oversees search, rescue, and evacuation of affected peoples and takes concrete measures to provide immediate relief, rehabilitation and early recovery.

The PEOC will serve as the hub of coordination for the Government response to a disaster. This center shall receive early warnings and issue information to the general public, media, ministries, departments, and humanitarian response agencies. The PEOC will coordinate relief and early recovery work in the post disaster scenario. The PEOC would be operational around the clock until the affected communities have been rescued, evacuated, and aided with relief goods. The PEOC oversees the deployment of evacuation, medical, search, and rescue teams in the affected area.

In the same manner, the DEOCs shall be activated with same functions as PDMA does at Province level. They will keep close liaison with the PDMA and shall update on regular basis.

3.2. RESCUE AND EVACUATION

A timely and well-coordinated response to safe evacuation significantly reduces the burden of rescue efforts. Once a disaster strikes at any place, the rescue, relief and rehabilitation operations starts simultaneously. In the wake of immediate response, the rescue operations start immediately after disaster strikes. However, if proper information are available and the threatened area is identified then the people at risk can be safely evacuated. For this specific reason, the PDMA Punjab has developed Integrated Early Warning System (IEWS) through Satellite based interconnectivity with the PMD and DEOCs in order to have a consolidated information system at single platform. This satellite system has been established inside the PDMA compound which provides latest information and status flood situation at the PEOC and further to the DEOCs (Figure 3.1).

At the local level, the affected population normally warned to evacuate through sirens, drum beatings, radio, cable, TV or other local means such as announcement though the Mosque's loudspeaker etc. PDMA is also linking through electronic and digital media for voice/short messaging to general public for early warnings and evacuations from the endangered areas. In case of exceptionally high-level flood disaster, Pakistan Army shall be called upon to act as reserve responders.

In case of High or Supper Flood, Evacuation efforts will be coordinated by the PDMA and are ordered by Deputy Commissioner, Punjab, considering the on-ground scenario. These will be carried out on prioritized basis. Based on the PDMA Multi-Hazard, Vulnerability and Risk Assessments, the collection and staging points are identified already near the safe places of the impacted area. The most vulnerable can find all this in their respective Atlases present online with the PDMA website. The shifting of segregated victims to designated hospitals and relief camps is done in the following order: The first to be evacuated are seriously injured or bedridden patients followed by handicapped or disabled persons, pregnant women, elderly persons, children, and women. The rapid evacuation of injured persons by the concerned agencies has to follow a simple color tagging process that prioritizes the patients that are in most urgent need of medical assistance. The list and location of the relief camp, deployed officials, designation, and corresponding duties; health Institutions involved during emergencies and bed capacity are available in each District Management Plans.

Figure 3.1: PDMA Satellite System

It is also worth to mention that all district administrations have already identified evacuation/relief centers at various locations and shared with PDMA *(For further reference, the details of all such centers are available in respective district disaster management plans)*

3.3. PROVISION OF HEALTHCARE SERVICES

The main purpose of providing healthcare services specifically in the relief camps is to prevent, reduce and control the spread of infectious and contagious diseases after the flood disaster strikes. In this regard, the PDMA, respective DDMAs and district health authorities closely liaison and conduct regular meetings to get updates, available stocks and possible threats. Besides, the District Health Authority also participates in the flood simulation exercise and establish their mobile health units. DDMAs and Health Authorities are vigilant about the outbreak of major diseases that can spread out in camp settings during flood season. Past experiences shows the spread of gastroenteritis, diarrhea, scabies, rashes, malaria and snake bites etc. Therefore, PDMA has established the following pre-requisites for all DDMAs that shall be followed in all relief camps:

Mobile clinics shall be immediately setup in the affected areas.
The District Health Authority will spearhead the relief effort in coordination with DDMAs, Provincial Health Department and PDMA.
The assistance of I/NGOs may be solicited as per government policy.

IV. Proper maintenance of records of all patients be ensured which shall ultimately help in identifying any epidemic outbreaks or for any other assessment.
V. At relief camps, there should be special setting/arrangement for orphans, persons with disabilities, destitute women and other vulnerable groups of the affected areas.
VI. A pre-disease assessment system is available which track the outbreak of diseases such as cholera, typhoid and malaria. The main goal of this system is to minimize the morbidity and mortality by detecting epidemics at the earliest possible stages.
VII. The District Administration shall assess the functional status and capacity of local, public and private health institutions/organizations in the vicinity of the disaster affected area.

Besides the provision of human related healthcare services, the respective DDMAs together with the Livestock and Dairy Farming Department actively engaged to provide healthcare and fodder services for livestock which is mainstay for the rural communities. The Livestock Department is looking after the following matters during flood emergencies:

I. Assist in saving livestock, reserves dry fodders and stock of animal feed.
II. Undertake curative and prophylactic vaccination, control of parasitic diseases and treatment of sick and wounded animals.
III. Stockpile medicines, vaccines and maintain proper inventory levels

3.4. HUMANITARIAN RESPONSE FACILITIES AND WAREHOUSES MANAGEMENT

With the financial and technical collaboration of United Nations World Food Programme (WFP), the PDMA Punjab has established two state-of-the-art Humanitarian Response Facilities at Muzaffargarh and Lahore districts (Table 3.1), with a storage capacity of around 6,000 MT per warehouse. The warehouse at Muzaffargarh enabled PDMA for provision of rescue and relief items effectively and reduced the response time for supplies to southern Punjab. Apart from the above warehouses, PDMA has also 11 Flospans (small warehouses) in 11 vulnerable districts of Punjab with each warehouse storage capacity of 300-500 MT.

ITEMS	WITH DDMAS	LHR HRF	M. GARH HRF	PAK ARMY	TOTAL
Tents	35,476	199	625	45	36,345

ITEMS	WITH DDMAS	LHR HRF	M. GARH HRF	PAK ARMY	TOTAL
OBMs	581	24	10	659	1,274
Boats	686	31	12	709	1,438
Plastic Mats	20,515	23,266	1,150	-	44,931
Mosquito Nets	15,744	20,725	68	-	36,537
De-watering sets	807	31	40	61	939
Life Jackets	11,352	1,418	212	8,135	21,117
Life Rings	2,779	725	88	343	3,935
Blankets	6,321	4,838	3,600	-	14,759

Table 3.1: PDMA's Humanitarian Response Facilities and Available Stock-2022

Figure 3.2: Humanitarian Response Facility at Lahore

3.5. IDENTIFIED SITES FOR ESTABLISHING RELIEF CAMPS

Each DDMA has already identified suitable sites that can be utilized for displaced persons during flood disaster. Their exact locations and accommodation capacities have been provided in all district disaster management plans and shared already with the PDMA Punjab for record. There have been utmost efforts to select sites located close to the affected communities and are safer enough to avoid any further risk of primary and secondary hazards. Besides, it has been ensured that basic amenities are provided and operational in the relief camps.

3.6. FLOOD LOSSES/DAMAGES ASSESSMENT

The PDMA has developed an interactive Dashboard to display the statistics of the loss/damages data occur during the year. Moreover, from the statistics data and location of the population, livestock, buildings, infrastructure, agricultural land area, etc., susceptible to flooding will be displayed for the effective and timely response. Hence pre-flood warning alerts, in the form of SMS will also be sent to the targeted population.

Figure 3.3: Dashboard Showing Damage and Losses Data During Flood Emergency

3.7. RESOURCE ALLOCATION AND DISPATCH

PDMA has also developed a login-protected module in Java Spring MVC Framework with Spring Security features. It was comprised of features for comprehensive inventory management, district-specific inventory allocation, and served as a dashboard for the overview of updated inventory status within the district keeping in view the large scale emergencies in the province.

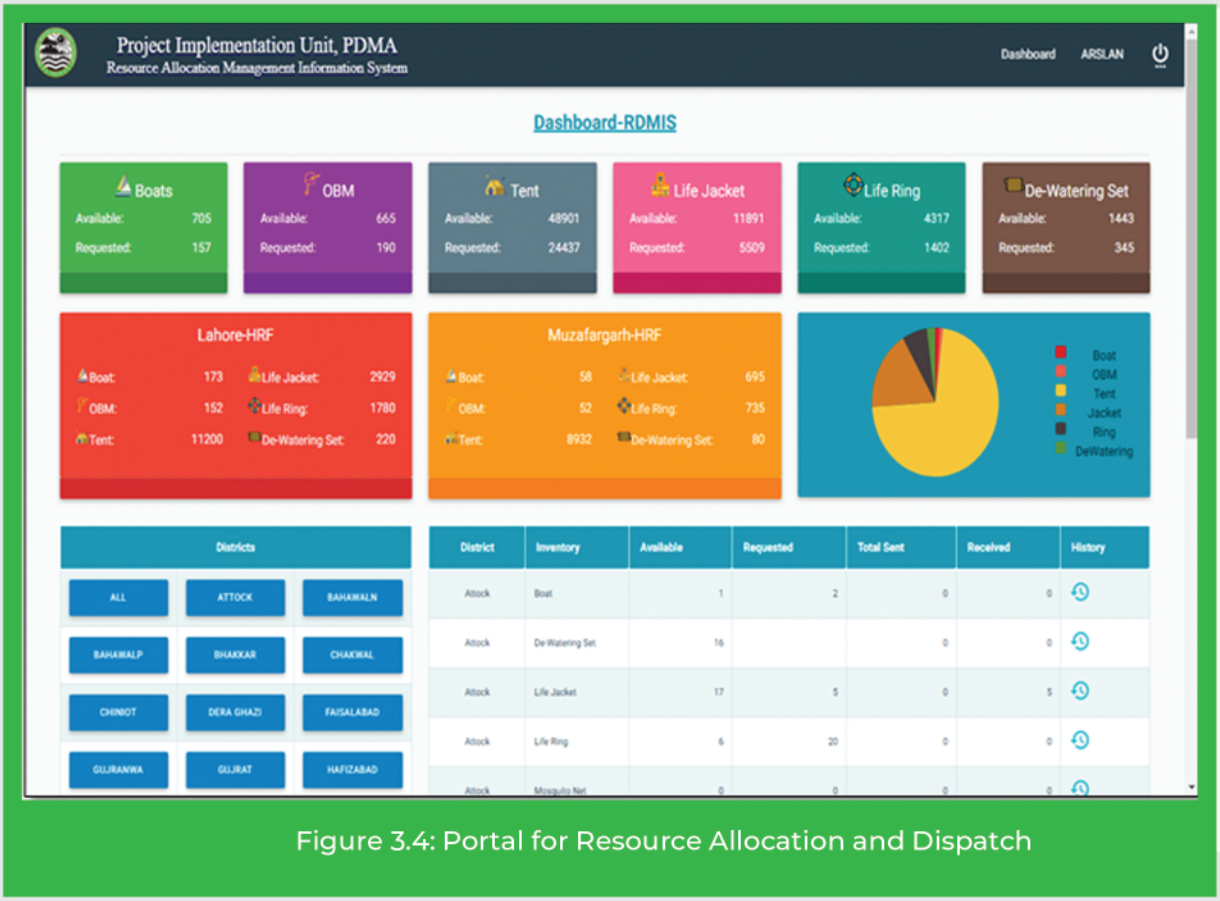

Figure 3.4: Portal for Resource Allocation and Dispatch

3.8. REHABILITATION AND RECOVERY

Since 2010 onwards, the Government of Punjab has faced three mega flood disasters, which help in increasing the capacities of PDMA and DDMAs to quickly respond to emergencies and provide relief services to the general public. In this regard, the Government of Punjab have launched various Emergency Cash Assistance Programmes in past for providing relief to the affected population. That assistance programmes includes Watan Card releasing PKR 12.44 Billion during 2010), Khadim-e-Ala Relief Card releasing PKR 0.76 Billion during 2012, and Khadim-e-Punjab Imdadi Package with PKR 14.11 Billion during 2014 (Table 3.2).

Table 3.2. Cash Assistance Programme

S. #.	Programme Name	Year	Beneficiaries	Amount (PKR Billion)
1	Watan Card Program	2010	622,092	12.441
2	Citizens Damage Compensation Programme	2010	345,859	13.801
3	Khadim-e-Alla Relief Card	2012	38,196	0.764
4	Khadim-e-Punjab Imdadi Package KPIP	2014	349,344	14.11
5	Prime Minister Kisan Package	2015	1,100,000	25
	TOTAL		2,548,491	66.77 Billion

Rehabilitation is largely dependent upon the restoration of basic transportation networks and infrastructures including roads and bridges. Without proper access, people are generally reluctant to return to their homes. Also, roads and bridges make repatriation easier for stakeholders. Therefore, the PDMA together with government line departments such as Communication & Works shall conduct damage and needs assessment, priority reopening and where needed rebuild the essential roads and bridges so that the basic communication and road networks become operational.

Similarly, other departments shall be engaged to restore their basic facilities, where buildings have been damaged, they shall be repaired and reopened with immediate effects. Schools and hospitals etc. are basic facilities that shall to be reopened as first priority for the public in order to facilitate rehabilitation and repatriation of the affected population. Electric power supply is very critical and essential for rehabilitation. With the support of WAPDA, the districts authorities shall restore its connections and supplies in order to facilitate those who are returning to their homes.

Alternatively, safety of affectees would be a part of the security management. Police and other Law enforcing agencies shall maintain law and order during and after the emergency, and provide security to the affected people. Appropriate measures shall immediately be taken to prevent the children from child labor or sexual exploitation. The Social Welfare Department and other NGOs which specialize in children related issues are normally assigned these tasks.

3.9. FORMATION OF DISTRICT COMMITTEE FOR CAUSALITIES/DEATH COMPENSATION

Under the direction of Senior Member Board of Revenue Office, a notification has been issued regarding the formation of “District Committees”, responsible for settling down the causalities and death compensation cases during and after the disaster situation (Annexure VII). The committee is comprising of respective Deputy Commissioner as convener while Mayor Metropolitan/Corporations/Chairmen District Councils, CEO District Health Authority, A.C. of the Concerned Tehsil and DEO PES Rescue1122 concerned are member of the committee.

Besides, the SMBR office has also approved and circulated compensation policy explaining the compensation amount to be given to the affectees of natural calamities. The policy clearly demonstrates the compensation rates according to the death, injuries, collapse of houses and loss of cattle etc.

3.10. SAFE RETURN OF DISPLACED POPULATION

The respective DDMAs shall take all possible measures to provide services of safe returns. For this purpose, the DDMAs with close coordination of PMD and PDMA decides on safer return while community trained volunteers, Community Emergency Response Teams, I/NGOs, PRCS, Civil Defence and Transport Department shall be mobilized to support in safe return of the evacuee.

SECTION FOUR:

LIST OF ANNEXURES

Annexure I: Protection Bunds and Vulnerable/Critical Points

Sr. #	Flood Bund	Critical points (RD Wise)
1	BCD Flood Bund, 8.64KM Fort Abbas, District Bahawalnagar	RD 6+000 to 8+000, Near Whaller Rest House
2	E.F Flood Bund 4.86 km length, Fort Abbas, Bahawalnagar	RD 41+000 to 42+000 (Near Chak No. 242)
3	Chenab Flood Bund, 48 km length, RD., Multan	RD. 90000 – 98000 & 150000 157000
4	Akbar Flood Bund, 6KM length, Multan	RD. 6000 - 11000
5	Bhakkar Flood Bund Protection Bund, 21 miles	56+000 to 57+000 74+000+75000 80+000 to 92+000
6	Left Bank of Link No. 01. 27KM, Dera Ghazi Khan	Left Bank No. 01 RD 138+000 to RD 165+000 Left Bank of Link No, IRD 165+000 to RD 180+000 to RD 204+500
7	Jassar Flood Bund, 1.86KM length, Narowal	Jassar Aliabad
8	Jandraka Flood Bund, Okara	RD 74 – 80
9	Right Marginal Bund, Okara	RD.33000 to RD. 35000
10	Left Marginal Bund, Okara	RD.8000 to RD. 10000
11	Bheco Chak Flood Bund, 6.20 km length, Narowal	Bheco Chak
12	Jalala Bunda, 5.34KM length Narowal	Village Attu Chak, Jhander
13	Haji Pur Gujran Bund, 7.55 Km Length, Narowal	Haji Pur, Gujran
14	Kotla Haji Shah, 16 km length, Layyah	Shah Wala
15	City Protection Bund, 7KM length, Layyah	
16	Right Marginal Bund, 21KM length, Mandi Bahauddin	RD 27+000 to 31+000
17	Left Marginal Bank, 3.43KM length, Mandi Bahauddin	RD 0 to 14 + 000 RD 15 + 000 to17 + 000
18	Khanwah Flood RD 0-65+000, 13KM length Muzaffargarh	RD31500-42000 37000-48000 and 49000-56000

Sr. #	Flood Bund	Critical points (RD Wise)
19	Chandarbhan Flood Bund RD 0-96+600	RD28000-44000 58000-65000
20	M-Garh Flood Band RD 0+000-188+ 000, 37.6 KM length, Muzaffargarh	RD 72+000 RD 78+000
21	Right Marginal Balloko Headworks, Nankana Sb, 9KM length	Right marginal Bund RD 11/12S
22	Madho Daas, 16KM length	There is no vulnerable point on this Bund
23	Jandraka Flood Bund, Nankana	RD 74 - 80
24	Right Marginal Bund, Nankana	RD.33000 to RD. 35000 583
25	Left Marginal Bund, Nankana	RD.8000 to RD. 10000
26	Sikrani Bund, Rahim Yar Khan	Mud Ranjaha, Khan
27	Minchin Bund, Rahim Yar Khan	Chachran Sharif & Samooka, Rahim Yar Khan
28	Extension Minchin Bund, Rahim Yar Khan	Bannu da Hut, Sadiqabad
29	Machka Dilawara Bund, Rahim Yar Khan	Bangla Dilkusha & Bhong, Ghotki Sindh
30	Jakhar Imam, Ja	Jakhar Imam, Jampur
31	Harrow Flood bund	RD: 25-29, Mouza Harrow, Jampur
32	Fakhar Flood Bund, Rojan	RD: 12-16, Tehsil Rajan
33	Rojhan Flood Bund, Rojan	RD: 8-35, Tehsil Rojan
34	J-Head Spur Rojhan	RD: 0-3000, Tehsil Rojan
35	J-head Spur R-64	RD: 5000-6300, Tehsil Rojan
36	Umer Kot Flood Bund	RD: 10-35, Tehsil Rojan
37	J-Head Spur R-63	J-Head Spur R-63, Tehsil Rojan

Sr. #	Flood Bund	Critical points (RD Wise)
38	Sahiwal Disty RD 58- 68250/R, Sargodha	RD 63-65, Tehsil Sahiwal
39	Kot Naja Flood Bund RD 0+000 to 103+000, Sargodha Jampur Flood Bund	RD 71+000 to 86+000, Sargodha
40	Flood Bund along Western Feeder Disty RD 2+000 to 14+500/R (along with 8 No. Studs) Sargodha	RD 6+000 to 14+500/R, Bhera
41	Flood Bund along Shahpur Branch RD 130+000 to 202+800/R, Sargodha	RD 166+000 to 202+800, Shahpur
42	Flood Bund along Shahpur Branch RD 246+000 to 261+500/R, Sargodha	RD 246+000 to 261+500, Shahpur
43	Flood Bund along Shahpur Disty RD 16+000 to 56+900, Sargodha	RD 44+000 to 56+900, Shahpur
44	Upper Chenab Canal	Village Noorpur, Gujrat
45	Farooqabad Flood Embankment	R.D114-115 Village Nokhar
46	Sheikhupura Flood	RD 80-81 DDC Bund
47	Gujrat Flood Bund	RD 22-23 & RD 27
48	Lala Musa Flood Bund	RD 9 to 10
49	Bhimber Right Bund	RD 3to 4, RD 9 to 10
50	DDC Flood Bund	RD 80-81 DDC Bund
51	Left guide bund U/S, Mianwali	
52	Left guide bund D/S, Mianwali	
53	Right guide bund U/S, Mianwali	
54	Right guide bund D/S, Mianwali	
55	Left marginal bund, Mianwali	
56	Right marginal bund, Mianwali	

Sr. #	Flood Bund	Critical points (RD Wise)
57	T - Head spur off-taking R.D.6500 R.M.B, Mianwali	
58	Canal Colony Protection Bund, Mianwali	
59	Hockey Spur Near village Beyo Syedan, Mianwali	
60	Flood Protection Bund Along river Kurram, Mianwali	RD: 8+500 –19+500 RD: 6+000 – 61+000
61	Stone Guide wall River Kurram, Mianwali	
62	J-Head Spur at Village Kahloon, Mianwali	
63	J-Head Spur at Village Bhakra, Mianwali	
64	Guide Spur at Alluwali, Mianwali	
65	Protection Wall at Alluwali, Mianwali	
66	Protection Wall at Dhingana, Mianwali	
67	Solid Stone Stud near village Doaba, Mianwali	
68	J-Head Spur at Piplan, Mianwali	
69	Guide Wall Spur at Piplan, Mianwali	
70	Guide Spur at Musawali	
71	J-Head Spur at Alluwali (shank portion), Mianwali	
72	Guide Head Spur at 29+000 Dhingana, Mianwali	
73	J-Head Spur at RD: 35+600 Doaba, Mianwali	
74	Left Marginal Bund RD 12000 to 13000 of left marginal bund	

Annexure II: Establishment of Community Emergency Response Teams (CERTs) by the Rescue 1122 at District Level

Sr. #	Districts	Total No. CERTs	Total No. of UCs	Total Rescue scouts Registered	Total Rescue Scouts trained
1	Attock	41	72	4,886	2,434
2	Bahawalnagar	205	135	15,911	15,841
3	Bahawalpur	109	109	7,532	2,445
4	Bhakkar	113	64	5,264	3,301
5	Chakwal	74	71	3,668	1,412
6	Chiniot	511	44	29,172	6,136
7	D.G. Khan	149	115	70,053	2,529
8	Faisalabad	530	346	28,627	6,369
9	Gujranwala	93	93	72,380	1,758
10	Gujrat	118	118	5,340	3,591
11	Hafizabad	59	46	26,950	3,687
12	Jhang	91	91	46,772	3,599
13	Jhelum	44	44	4,374	3,176
14	Kasur	168	125	7,318	2,068
15	Khanewal	135	135	33,147	6,872
16	Khushab	48	48	28,166	2,018
17	Lahore	236	274	8,819	3,319
18	Layyah	258	44	7,433	5,049
19	Lodhran	81	70	28,974	3,805
20	Mandi Bahauddin	110	80	35,524	1,917
21	Mianwali	68	51	42,777	1,688
22	Multan	192	185	69,301	6,387
23	Murree	15	14	17,200	971
24	Muzaffargarh	111	111	23,806	7,820
25	Nankana Sahib	65	65	11,580	1,269
26	Narowal	98	63	26,387	4,425
27	Okara	140	140	30,854	1,791
28	Pakpattan	54	54	26,550	1,394
29	Rahim Yar Khan	139	139	36,521	5,319
30	Rajanpur	179	69	146,881	4,694
31	Rawalpindi	570	143	7,402	7,402
32	Sahiwal	100	100	1,200	1,200
33	Sargodha	186	186	157,338	3,370
34	Sheikhupura	159	99	6,662	3,127
35	Sialkot	152	148	60,561	6,509
36	Toba Tek Singh	85	85	24,834	2,985
37	Vehari	105	105	25,345	7,253
	Grand Total	5,591	3,381	1,052,309	148,930

Annexure III: List of Trained Volunteers Enrolled with District Administration

Sr. #	Name of District	Total number Volunteer	Male	Female
1	Attock	30	25	5
2	Bahawalnagar	100	100	0
3	Bahawalpur	52	52	0
4	Bhakkar	26	26	0
5	Chiniot	42	39	3
6	Chakwal	50	46	4
7	Dera Ghazi Khan	15	14	1
8	Faisalabad	0	0	0
9	Gujranwala	50	43	7
10	Gujrat	13	13	0
11	Hafizabad	98	94	4
12	Jhang	94	94	0
13	Jhelum	164	164	0
14	Khanewal	28	28	0
15	Khushab	30	30	0
16	Lahore	500	465	35
17	Layyah	30	30	0
18	Lodhran	30	29	1
19	Mianwali	25	25	0
20	Mandi Bahauddin	30	30	0
21	Multan	50	50	0
22	Muzaffargarh	1,630	1,300	330
23	Nankana Sahib	116	114	5
24	Narowal	304	298	6
25	Okara	100	100	0
26	Pakpattan	22	22	0
27	Rajanpur	234	226	8
28	Rawalpindi	244	239	5
29	Rahim yar khan	147	147	0
30	Sahiwal	0	0	0
31	Sargodha	30	30	0
32	Sheikhupura	110	110	0
33	Sialkot	50	47	3
34	Toba Tek Singh	50	50	0
35	Vehari	30	30	0
36	Kasur	253	238	15
	TOTAL	4,777	4,348	432

Annexure IV: District level rescue and relief equippment inventory-2022

Sr. #	Districts	Boats	OBM	Tents	Life Jackets	Life Rings	De-watering sets	Plastic Mats	Mosquito Nets	Blankets
1	Attock	10	9	20	185	15	18	0	0	0
2	Bahawalnagar	15	15	2689	140	45	38	250	1100	100
3	Bahawalpur	1	0	2669	140	45	7	250	1100	100
4	Bhakkar	22	20	970	235	126	0	140	157	0
5	Chakwal	4	4	30	43	63	-	5	0	0
6	Chiniot	25	25	493	546	106	26	827	985	0
7	DG Khan	38	46	2584	419	32	107	1890	1650	0
8	Faisalabad	9	10	330	87	7	1	400	200	0
9	Gujranwala	29	31	500	520	190	2	209	9	0
10	Gujrat	23	27	380	270	125	29	290	500	286
11	Hafizabad	42	40	1824	577	144	8	988	0	11
12	Jhang	-	-	-	-	-	-	-	-	-
13	Jhelum	24	23	1034	320	27	23	578	588	0
14	Kasur	-	-	-	-	-	-	-	-	-
15	Khanewal	15	15	289	192	15	0	174	0	190
16	Khushab	12	21	928	335	51	15	500	500	100
17	Lahore	19	10	4	23	28	268	0	0	37
18	Layyah	30	30	800	520	66	0	1250	300	550
19	Lodhran	9	9	350	170	4	0	175	180	0
20	Mandi Bahauddin	22	21	20	338	104	0	0	0	0
21	Mianwali	23	23	1950	280	45	30	1726	480	0
22	Multan	39	0	2199	540	216	0	975	710	0
23	Muzaffargarh	0	31	0	732	0	42	0	0	0
24	Nankana Sahib	0	0	530	90	125	0	370	0	130
25	Narowal	23	21	1175	238	104	8	1304	892	200
26	Okara	21	21	842	558	0	26	377	0	310
27	Pakpattan	7	8	750	157	62	0	612	0	80
28	Rajanpur	32	22	2528	370	131	59	1771	923	0
29	Rawalpindi	14	19	30	710	43	48	30	30	0
30	R.Y. Khan	34	0	0	421	9	0	0	0	0
31	Sahiwal	7	0	241	80	140	6	0	0	0
32	Sargodha	18	21	2000	190	169	28	750	0	2000
33	Sheikhupura	21	19	50	160	78	89	10	0	100
34	Sialkot	-	-	-	-	-	-	-	-	-
35	T.T. Singh	9	10	330	13	7	1	400	200	0
36	Vehari	9	10	300	60	40	1	0	50	0

Annexure V: Constitution of Provincial Disaster Management Authority Punjab

TO BE SUBSTITUTED BEARING SAME NUMBER & DATED 25.09.2019

GOVERNMENT OF THE PUNJAB
SERVICES & GENERAL ADMINISTRATION DEPARTMENT
(CABINET WING)

5690
25 NOV 2020
R&I Central HUB

SMBR

Dated Lahore, the 24th November, 2020

NOTIFICATION

No.SO(CAB-II)8-5/2018. The Chief Minister, Punjab has been pleased to constitute Cabinet Committee on Disaster Management comprising the following:-

i.	Mian Khalid Mehmood, Minister for Disaster Management	**(Chairman/Convener)**
ii.	Muhammad Mohsin Leghari, Minister for Irrigation	(Member)
iii.	Mr. Muhammad Sibtain Khan, Minister for Forest	(Member)
iv.	Syed Hussain Jahania Gardezi, Minister for Agriculture	(Member)
v.	Malik Nauman Ahmad Langrial, Minister for MPDD	(Member)
vi.	Muhammad Taimoor Khan, Minister for Youth Affairs/Sports	(Member)
vii.	Mr. Muhammad Hashim Dogar, Minister for Population Welfare	(Member)
viii.	Mr. Samiullah Chaudhary (MPA-246)	(Member)
ix.	Chief Secretary, Punjab	**(Vice-Chairman)**
x.	Inspector General of Police, Punjab	(Member)
xi.	Senior Member, BOR, Punjab	(Member)
xii.	Addl. Chief Secretary, Home Department	(Member)
xiii.	Secretary, Finance Department	(Member)
xiv.	Secretary, P&D Department	(Member)
xv.	Secretary, C&W Department	(Member)
xvi.	Secretary Irrigation Department	(Member)
xvii.	Secretary, Agriculture Department	(Member)
xviii.	Secretary, Information & Culture Department	(Member)
xix.	Secretary, SH&ME Department	(Member)
xx.	Secretary, P&SH Department	(Member)
xxi.	Secretary, L&DD Department	(Member)
xxii.	Secretary, LG&CD Department	(Member)
xxiii.	Secretary, HUD&PHE	(Member
xxiv.	Director General, PDMA	(Secretary)
xxv.	Director, Civil Defence	(Member)
xxvi.	Director General, Rescue 1122	(Member)
xxvii.	Rep. HQ 4 Corps Engineer	(Member)
xxviii.	Any other member to be co-opted by the Committee	

24/11/2020

DG PDMA
PO
PO
PD

DY NO 7012
PS TO SMBR
DATE 26/11/2020

P. A. to Director
Diary No: 4086
Dated: 18-12-2020

4627
15-12-2020

Annexure VI: Contact Details of DEOCs in Each District

Sr. #	Name of Focal Person	District	LAND LINE NO	CELL NO
1	Mr. Sufyan	DEOC Attock	057-2700494	0334-9582410
2	Mr. Muhammad Asad	DEOC Bahawalnagar	063-9240306	0333-2728458
3	Mr. Muhammad Azeem	DEOC Bahawalpur	062-9250508	0321-6841180
4	Mr. Nawaz Malik	DEOC Bhakkar	045-3920082	0323-7258664
5	Mr. Bashir	DEOC Chakwal	0543-660250	0321-6600769
6	Mr. Umar Hayat	DEOC Chiniot	047-6331246	0301-8663423
7	Mr. Zubair Ahmad	DEOC D.G.Khan	064-2460603	0336-8600725
8	Mr. Muhammad Sadiq	DEOC Faisalabad	041-9201491-92	0300-6691431
9	Mr. Bilal	DEOC Gujranwala	055-9200070	0300-6414933
10	Mr. Zaheer Liaqat	DEOC Gujrat	053-9260300	0345-6868768
11	Mr. Waleed Arshad	DEOC Hafizabad	0547-920111	0300-7551565
12	Mr. Shahzad Khalil	DEOC Jhang	047-9330005	0333-8222929
13	Mr. Shakeel	DEOC Jhelum	0544-9270256	0333-4149029
14	Mr. Rashid	DEOC Kasur	049-2724954	0321-7148688
15	Mr. Shahid Rizwan	DEOC Khanewal	065-2551718	0333-6469884
16	Mr. Ahmad Saeed	DEOC Khushab	0454-920215	0300-4753596
17	Mr. Ali Murtaza	DEOC Lahore	042-9920630	0324-4569244
18	Mr. Ishfaque Hussain	DEOC Layyah	0606-920016	0300-8662291
19	Mr. Majid Ahmad	DEOC Lodhran	0608-9200121	0300-4903090
20	Mr. Ehsan ul Haq	DEOC M. Bahauddin	0546-650152	0306-7560001
21	Mr. Aftab Khan	DEOC Mianwali	045-9230611	0307-0474485
22	Mr. Mudassir Zia	DEOC Multan	061-4580662	0300-6309301
23	Mr. Muhammad Saleem	DEOC Muzaffargarh	066-9200257	0300-7872303
24	Mr. Shahbaz	DEOC Nankana Sahib	056-9201046	0334-4167788
25	Mr. Furqan Hameed	DEOC Narowal	0542-920027	0306-6133067
26	Mr. Junaid	DEOC Okara	044-9200287	0322-6968015
27	Mr. Fayyaz	DEOC Pakpattan	0457-921020	0321-4630359
28	Mr. Waleed	DEOC Rahim Yar Khan	068-9230287	0300-4533462
29	Mr. Abdul Rehman	DEOC Rajanpur	0604-920029	0333-5118428
30	Mr. Amir Nazir	DEOC Rawalpindi	051-9292963	0333-4691740
31	Mr. Zeeshan ul Haq	DEOC Sahiwal	040-9200069	0301-6922733
32	Mr. Muhammad Saqib	DEOC Sargodha	048-9230043	0300-5650624
33	Mr. Ijaz Ahmad	DEOC Sheikhupura	056-3612895	0333-4147989
34	Mr. Muhammad Tayyab	DEOC Sialkot	052-9250011	0346-6703836
35	Mr. Azeem Sarwar	DEOC Toba Tek Singh	046-9201003	0334-6262488
36	Mr. Khurram Saleem	DEOC Vehari	067-3365508	0333-6929933

Annexure VII: Notification of District Committee for Causalities/Death Compensation

P D M A

BOARD OF REVENUE, PUNJAB,
DISASTER MANAGEMENT
DEPARTMENT/PDMA
40-A, LAWRENCE ROAD

Lahore dated the 07th August, 2017.

NOTIFICATION

No. 594 -2017/ 823 /CR-I. In compliance with the directions of the Cabinet Committee on Floods in its meeting held on 02-08-2017, the competent authority has been pleased to constitute a "District Committee" comprising of the following members in order to verify the genuineness of causalities/death compensation cases for payment of compensation in pursuance of instructions issued vide PDMA Punjab's letter No.513-2017/631/CR-I, dated 8-7-2017, during rains/floods:-

i.	Deputy Commissioner	Convener
ii.	Mayor Metropolitan/Corporations/ Chairmen District Councils	Member
iii.	CEO District Health Authority	Member
iv.	A.C. of the concerned Tehsil	Member
v.	DEO PES Rescue-1122 concerned.	Member

DR. MUHAMMAD SAQIB AZIZ
SENIOR MEMBER, BOARD OF REVENUE/
RELIEF COMMISSIONER, PUNJAB.

No. & Date Even.

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

1. The Chief Secretary, Punjab.
2. All the Commissioners in the Punjab.
3. All the Deputy Commissioners in the Punjab
4. PSO to Minister for P&D/Punjab, Lahore
5. PSO to Minister for Disaster Management, Punjab, Lahore.
6. PS to D.G. PDMA, Punjab.

7/8/17
DIRECTOR (OPERATIONS)
Provincial Disaster Management Authority, Punjab

Annexure VIII: Contact Details of Important Offices

1st Shift (08.00 AM to 04.00 PM) (Monday to Saturday)				
1	M.Irfan Khan (Shift In-charge)	A.D Ops.	PDMA	0300-5146140
2	Dr. Iftikhar Hussain Bhatti	H.O.	Agri.	0345-4715640
3	Dr. Razia Sultana	S.V.O.	Livestock	0301-4441753
4	Muhammad Salman	D.D	Irrigation	0300-4245588
5	Irslan Hassan	S.D.P	PDMA	0321-5827370
6	Arslan Fareed	I.T. Assistant	PDMA	0322-8077881
7	Bilal Ahmad	I.T. Assistant	PDMA	0307-7788577
8	M. Rafay Naeem	O.A	PDMA	0306-2879371
9	Tanveer Munir	A.D.	LG	0333-4284076
10	Tahir Jamshaid	J.C	Health	0334-4269344
11	Hafiz Abdul Wahab	F.A	SWD	0321-4898835
12	WASA STAFF	---	WASA	Change Daily Basis
13	C&W STAFF	---	C&W	Change Daily Basis
14	Muhammad Haroon	Supervisor	Civil Defense	
15	Haroon Pervaiz	Sub Engineer	WAPDA	0322-5551716
16	Hafiz Zulifqar	Naib Qasid	PDMA	0334-9798467
2nd Shift (4.00 PM to 12.00 AM) (Monday to Saturday)				
1	Irfan Ahmadn(Shift Incharge)	Superintendent	PDMA	0345-4073347
2	Akif Rahim	D.D	Irrigation	0321-8561374
3	Usman Ali Khan	Assistant	PDMA	0300-4798807
4	Kaleem Ullah	I.T. Assistant	PDMA	0302-6406123
5	M.Jameel	Steno.	PDMA	0301-4081596
6	Qamar Mushtaq	V.Assistant	Livestock	0347-2207073
7	Abdul Rehman	J.C	Health	0324-4573038
8	Jamshid	S.C	Energy	0300-9423249
9	Mehboob Ahmad	Field Assistant	Agriculture	0310-7609068
10	Ali Kashif	Supervisor	S.W.D	0321-4251107
11	Javid Aslam	A. D.	L.G	0301-3239502
12	M. Raheel Ajmal	Instructor	Civil Defense	0301-7084540
13	C&W STAFF	---	C&W	Change Daily Basis
14	WASA STAFF	----	WASA	Change Daily Basis
15	M. Shafiq	Naib Qasid	PDMA	0320-4119378

3rd Shift (12.00 AM to 08.00 AM) (Monday to Saturday)				
1	Muhammad Bilal (Shift Incharge)	Assistant	PDMA	0309-6816349
2	Sajid Mehmood	D.D	Irrigation	0347-6665925
3	Shajar Hussain	I.T. Assistant	PDMA	0337-7764310
4	Haseeb Haider	J.C	PDMA	0345-8075751
5	Noman Khalid		Health	
6	Mian Muhammad Kamran		Livestock	
7	Iftikhar Ahmad	Assistant	Food	0333-4231114
8	WASA STAFF	----	WASA	Change Daily Basis
9	C&W STAFF	---	C& W	Change Daily Basis
10	Zeeshan Ullah	Rescuer	Civil Defense	0333-4900973
11	Adnan Danish		L.G	0333-4055807
12	Muhammad Nadeem	Naib Qasid	PDMA	0309-1495687

- Contact Numbers of Control Room of PDMA, Punjab.
- Telephone No.042-99204408 042-99204409
- Fax No.042-99204404 042-99204405
- E-mail address pdma.gop@gmail.com

FEDERAL FLOOD COMMISSION

Sr#	Name	Designation	Telephone office	Fax	Mobile	Official E-Mail Address
1	Mr. Ahmed Kamal	Chief Engineering Adviser & Chairman Federal Flood Commission	051-9244600 051-9244604	051-9244621	0300-5278981	chairman @ffc.gov.pk
2	Mr. Ashok Kumar	Chief Engineer (Floods)	051-9244628	051-9244621	0334-5081232	cef@ffc.gov.pk
3	Dr. Qazi Tallat Mehmood Siddiqui	Chief Engineer (DSC)	051-9244625	051-9244621	0333-5254670	sef@ffc.gov.pk
4	Dr. Muhammad Ejaz Tanveer	Superintending Engineer (Floods), (Focal Person)	051-9244622	051-9244621	0334-5240918	ddsmi@ffc.gov.pk
5	Mr. Hanif Chachara	Deputy Director (Supervision & Monitoring)-II	051-9212371	051-9244621	0333-7141471	ddsmii@ffc.gov.pk

FEDERAL FLOOD COMMISSION

	Name	Designation	Telephone office	Fax	Mobile	Official E-Mail Address
6	Mr. Hussain Shigri	Senior Engineer (Floods)	051-9244609	051-9244621	0346-4108820	srefii@ffc.gov.pk
7	Mr. Sibite Hassan	Assistant Engineer (Floods)-II	051-9244605	051-9244621	0333-7337216	aefii@ffc.gov.pk

FLOOD COMMUNICATION CELL (FCC)

i	Mr. Asif Ali Shigri	Head Draftsman	051-9244616	051-9244621	0304-8443677	oocencffc @ffc.gov.pk
ii	Mr. Muhammad Ibrahim	Draftsman			0304-8443677	
	Mr. Muhammad Ali	Draftsman			0343-5285370	

PAKISTAN METEOROLOGICAL DEPARTMENT

Name	Designation	Telephone office	Mobile	Fax
Sahibzad Khan	Chief Meteorologist	042-99200208	0333-6139523	042-99200209
Ikram-ud-Din	Director	042-99201859	0332-4156213	
Shahid Abbas	Director	042-99203237	0333-4212581	
Akhtar Mahmood	Meteorologist	042-99205369| 042-99200139	0333-4760667	
Duty Forecasting Officer	Deputy Director Metrologist/Assist	042-99205369 | 042-99200139		042-99205370
Deputy Officer	Dissemination	042-99205367 | 042-99205368		
		042-99205370		

RESCUE 1122 DEPARTMENT

Name	Designation	Telephone office	Fax
Dr. Muhammad Azam	Regional Emergency Officer Lahore	042-99231702	
Dr. ARahman	Regional Emergency Officer Rawalpindi	051-2742147	
Dr. Ijaz Anjum	Regional Emergency Officer Multan	061-9220308	
Mr. Syed Kamal Abid	Regional Emergency Officer Gujranwala	052-9250257	052-9250258
Dr. Mian Muhammad Ashfaq	Regional Emergency Officer Faisalabad	048-3838022	
Dr. Faisal Mehmood	Regional Emergency Officer Sargodha	064-2430383	

Name	Designation	Phone	Fax
Dr. Muhammad Natiq Hayat	Regional Emergency Officer Dera Ghazi Khan	064-2430383	
Dr. Abdul Sattar Babar	Regional Emergency Officer Bahawalpur	062-9250500	
Dr. Muhammad Irshad ul Haq	Regional Emergency Officer Sahiwal	040-9200105	

DISTRICT EMERGENCY OFFICERS/ PUBLIC INFORMATION OFFICERS

Name	Designation	Phone	Fax
Mr. Shahid Waheed Qamar	District Emergency Officer Lahore	042-9231717	042-9932078
Mr. Kamran Rashid	District Emergency Officer Rawalpindi	051-9290121	051-4455765
Dr. Kaleem Ullah	District Emergency Officer Multan	061-9220306	061-9220309
Mr. Riffat Zia	District Emergency Officer Gujranwala	055-9201390	055-9201389
Engr. Ahtisham	District Emergency Officer Faisalabad	041-9201535	041-9201536
Mr. Mazhar Shah	District Emergency Officer Sargodha	048-9230427	048-9230405
Dr. Muhammad Nayyar Alam	District Emergency Officer Dera Ghazi Khan	064-9239101	064-2470501
Mr. Bakir Hussain	District Emergency Officer Bahawalpur	062-9250500	062-2280765
Dr. Khalid Abdullah	District Emergency Officer Sahiwal	040-9200004	040-9200108
Mr. Ali Hussain	District Emergency Officer Attock	057-9316020	057-2604364
Engr. Ubaid Ullah Khan	District Emergency Officer Bhakkar	0453-9200425	0453-9200423
Engr. Rao Sharafat Ali	District Emergency Officer Bhawalnagar	063-9240170	063-9240170
Dr. Ateeq Ahmad Khan	District Emergency Officer Chakwal	0543-541400	054-3541400
Ms. Tahira Khan	District Emergency Officer Chiniot	047-6333611	
Mr. Umar Ali Akbar Ghumman	District Emergency Officer Gujrat	053-3521122	053-3522788
Mr. Muhammad Naeem Akhtar	District Emergency Officer Hafizabad	0547-526013	0547-526013
Engr. Ali Hussain	District Emergency Officer Jhang	047-7652110	0479200178
Mr. Saeed Ahmad	District Emergency Officer Jhelum	0544-646197	0544-646198
Mr. Sultan Mehmood	District Emergency Officer Kasur	0492-772203	0492-772601
Dr. Khalid Mehmood	District Emergency Officer Khanewal	065-9200366	065-9200367
Engr Hafiz Abdul Rasheed	District Emergency Officer Khushab	0454-933070	0454-933071
Dr. Sajjad Ahmad	District Emergency Officer Layyah	0606-410185	0606-410186
Dr. Syed Majid Ahmad	District Emergency Officer Lodhran	0608-9200113	0608-9200114
Engr. Imran Khan	District Emergency Officer Mandi Bahauddin	0546-509838	0546-509837
Dr. Hussain Mian	District Emergency Officer Muzaffargargh	066-9200100	066-9200100
Engr. Naveed Iqbal	District Emergency Officer Mianwali	0459-920257	0459-920257
Mr. Sibghat Ullah	Incharge Emergency Officer Murree	051-3412523	051-3412520
Mr. Muhammad Akram	District Emergency Officer Nankana Sahib	056-2876702	0562-876703
Mr. Adnan Nawaz	District Emergency Officer Narowal	0542-412153	0542-412155

Name	Designation	Phone	Fax
Mr. Zafar Iqbal	District Emergency Officer Okara	044-9200009	044-9200229
Dr. Ahtesham Mazhar	District Emergency Officer Pakpattan	0457-371140	0457-371140
Dr. Adil Rehman	District Emergency Officer Rahim Yar Khan	068-9230006	068-9230180
Dr. Muhammad Aslam	District Emergency Officer Rajanpur	0604-690193	0604-690191
Mr. Rana Muhammad Ijaz	District Emergency Officer Sheikhupura	056-9239095	056-3780518
Mr. Naveed Iqbal	District Emergency Officer Sialkot	052-9250576	052-9250256
Engr. Faraz Munir	District Emergency Officer Toba Tek Singh	046-2512997	046-2514122
Engr. Danish	District Emergency Officer Vehari	067-3360905	067-3360907


حکومت پنجاب

PROVINCIAL DISASTER MANAGEMENT AUTHORITY,GOVERNMENT OF PUNJAB

40-A LAWRENCE ROAD LAHORE, PUNJAB