

2017

Provincial Disaster Response Plan



Provincial Disaster
Management Authority Punjab







“Securing Lives and Livelihood”

**PROVINCIAL
DISASTER MANAGEMENT
AUTHORITY PUNJAB**



TABLE OF CONTENTS

ACKNOWLEDGEMENT	i
FOREWORD	ii
MESSAGE FROM SMBR/CHAIRMAN	iii
MESSAGE FROM CHIEF SECRETARY PUNJAB	iv
GLOSSARY OF ACRONYMS	v
DISASTER RELATED TERMS	vii

CHAPTER 1 THE PUNJAB PROVINCE

1.1	THE PROVINCIAL PROFILE	02
1.2	PUNJAB'S POTENTIAL DISASTER PROFILE	04

CHAPTER 2 TYPES OF DISASTERS AND THEIR MANAGEMENT

2.1	FLOODS	06
2.1.1	CHARACTERISTICS OF FLOOD VULNERABILITY OF PUNJAB	06
2.1.2	BRIEF HISTORY OF FLOODS IN PUNJAB	06
2.1.3	RIVERS OF THE PUNJAB	11
2.2	DROUGHT MANAGEMENT	13
2.2.1	AN OVERVIEW	13
2.2.2	CHOLISTAN	13
2.2.3	DROUGHT STAGES	15
2.2.4	SOPs FOR DROUGHT MANAGEMENT	16
2.3	EARTH QUAKE MANAGEMENT	17

2.3.1	EARTH QUAKE IMPACT AND RISK ASSESSMENT	17
2.3.2	PROTECTION AND PRECAUTIONARY MEASURES	17
2.4	EPIDEMICS	19
2.4.1	WHAT IS AN EPIDEMIC?	19
2.4.2	CONTROL OF COMMUNICABLE DISEASES	20
2.4.3	ESTABLISHMENT OF DISASTER MANAGEMENT WARDS	21
2.5	CHEMICAL DISASTER MANAGEMENT	22
2.5.1	CHEMICAL DISASTER	22
2.5.2	MANAGEMENT OF CHEMICAL DISASTERS – SOPS FOR DDMA _s	23
2.6	FIRE DISASTERS	24
2.6.1	FIRE DISASTER MANAGEMENT	24
2.6.2	CLASSES OF FIRE AND TYPES OF FIRE EXTINGUISHERS	25
2.6.3	PREVENTIVE AND PROTECTIVE MEASURES	26
2.6.4	PREVENTION AND PRECAUTIONARY MEASURES FOR DDMA _s IN CASE OF FIRE INCLUDING FOREST FIRE	27
2.7	HEAT WAVE	28
2.7.1	WHAT IS HEAT WAVE?	28
2.7.2	PRECAUTIONARY MEASURES	29
2.8	RODENT CONTROL	31
2.8.1	RODENT INFESTATION	31
2.8.2	MANAGING RODENTS	32
2.9	SMOG	33

CHAPTER 3 MONSOON FORECAST FOR 2017

3.1	CLIMATE CHANGE AND 2016 IN PERSPECTIVE	35
3.2	MONSOON FORECAST 2017 (JUNE 2017)	35

CHAPTER 4 THE PROVINCIAL FLOOD CONTINGENCY PLAN 2017

4.1	ROLE OF PDMA PUNJAB	37
4.1.1	AN OVERVIEW OF PDMA PUNJAB	37
4.1.2	PDMA PUNJAB AND DISASTER MANAGEMENT	37
4.1.3	ALERTNESS LEVEL	38
4.1.4	THE VULNERABLE DISTRICTS IN PUNJAB	39
4.1.5	ACTIVITY TIME FRAME FOR 2017	40
4.1.6	MEETINGS AND COORDINATION MECHANISM	41
4.1.7	PRE-FLOOD ARRANGEMENTS	41
4.1.8	RISK REDUCTION EFFORTS	44
4.1.9	PDMA CONTROL ROOM	44
4.1.10	MEDIA WATCH AND PUBLIC AWARENESS	49
4.1.11	PDMA WAREHOUSES	51
4.1.12	CAPACITY BUILDING AND ESTABLISHMENTS OF DDMA OFFICES	52
4.2	DISASTER RESPONSE FUNCTIONS	53
4.2.1	RESCUE AND EVACUATION	53
4.2.2	RELIEF EFFORTS- CAMP MANAGEMENT SYSTEM	53
4.2.3.	PROVISION OF MEDICAL SERVICES	57
4.2.4.	REHABILITATION	57

4.3	ROLES AND RESPONSIBILITIES OF DEPARTMENTS	59
4.3.1	NDMA	59
4.3.2	DDMAS	60
4.3.3	IRRIGATION DEPARTMENT	61
4.3.4	PUNJAB EMERGENCY SERVICE (RESCUE 1122)	72
4.3.4.1	THE DISASTER RESPONSE FORCE (DRF)	72
4.3.4.2	ROLES AND RESPONSIBILITIES	72
4.3.5	HOME DEPARTMENT	74
4.3.6	CIVIL DEFENSE	75
4.3.7	HEALTH DEPARTMENT (PRIMARY AND SECONDARY HEALTHCARE DEPARTMENT AND SPECIALIZED HEALTHCARE AND MEDICAL EDUCATION DEPARTMENT)	76
4.3.8	EDUCATION DEPARTMENT	78
4.3.9	COMMUNICATION AND WORKS DEPARTMENT	79
4.3.10	AGRICULTURE DEPARTMENT	80
4.3.11	LIVESTOCK AND DAIRY DEVELOPMENT DEPARTMENT	81
4.3.12	HOUSING, URBAN DEVELOPMENT & PUBLIC HEALTH ENGINEERING DEPARTMENT (HUD & PHED)	82
4.3.13	SOCIAL WELFARE DEPARTMENT	83
4.3.14	INFORMATION DEPARTMENT	84
4.3.15	LOCAL GOVERNMENT & COMMUNITY DEVELOPMENT DEPARTMENT	85
4.3.16	INDUSTRIES DEPARTMENT	86
4.3.17	FOOD DEPARTMENT	87

4.3.18	PAKISTAN ARMY	88
4.3.19	PAKISTAN METEOROLOGICAL DEPARTMENT	89
4.3.20	WATER AND POWER DEVELOPMENT AUTHORITY (WAPDA)	90
4.3.21	FEDERAL FLOOD COMMISSION (FFC)	91

CHAPTER 5 PDMA PUNJAB IN 2017 – REVAMPING INITIATIVES

5.1	INTEGRATION OF EARLY WARNING SYSTEM (SURVEILLANCE & INTER-CONNECTIVITY)	93
5.2	SATELLITE BASED NETWORK CONNECTIVITY	94
5.3	INVENTORY MANAGEMENT SYSTEM	95
5.4	SATELLITE BASED TRACKING SYSTEM	96

ANNEXURES

ANNEXURE 1.	DISTRICT DISASTER MANAGEMENT PLAN (DDMP)- 2017 TEMPLATE	98
ANNEXURE 2.	CONTACT NUMBERS OF DEPUTY COMMISSIONERS, ADCs	123
ANNEXURE 3.	PES (RESCUE 1122) CONTACT LIST	127
ANNEXURE 4.	RAINFALL STATEMENT FOR THE MONTHS OF JUL, AUG AND SEPT 2016	129
ANNEXURE 5.	FLOOD FIGHTING EQUIPMENT (DDMAs/DISTRICTS)	136



ACKNOWLEDGEMENT

Provincial Disaster Response Plan presents a comprehensive guideline for ensuring readiness of all the stakeholders to prepare for and combat any calamity, particularly the approaching monsoon. This Plan is indeed a concerted endeavor on the part of PDMA Punjab to map out all institutional framework, roles & responsibilities and SOPs required for disaster risk reduction and its management. PDMA gratefully acknowledges that preparation of this Plan could have hardly been possible without valuable inputs of the District Administrations and all line departments. They made wholehearted efforts for timely furnishing with their respective contingency plans which made bringing out this plan possible.

PDMA acknowledges the guidance provided by Chief Secretary, Punjab and SMBR / Relief Commissioner, Punjab and appreciates the devoted efforts and perceptive contribution of Dr. Khurram Shahzad, Director PDMA, and Ms. Fazilda Nabeel, consultant PDMA who formulated, edited and prepared the PDRP (Provincial Disaster Response Plan) 2017.

PDMA also extends its gratitude and appreciates the zealous efforts of Mr. Muhammad Sajjad, Director Operations, Mr. Muzammil Bashir, Procurement Officer and Mr. Zafar Haider Shamsi, Assistant Director (Admn) PDMA for their valuable inputs.

The cover and back page are designed by Dr. Khurram Shahzad, Director PDMA Punjab.



FOREWORD

Climate change, rapid population growth and the break-neck pace of urbanization have led to unprecedented damages occurring in the wake of natural disaster events in Pakistan. Disaster management has therefore become an important aspect of government functioning. The frequency of Natural disasters is undeniably increasing due to the change in climatic patterns, urbanization, population growth and destruction of the natural environment which has not contributed only to the physical vulnerabilities but also weighing heavily upon economies of the developing countries. Although completely circumventing the disasters is beyond human manipulation, yet timely preparedness by putting the academic, material financial and human resources in place, the life and livelihood losses could reasonably be attenuated. Disaster Risk Management is a holistic and integrated business, the core of which is maintaining concerted coordination amongst all the agencies on board. During a disaster, timely dissemination and sharing of every forthcoming information through the conventional and modern means of media - radio, television, cell phones, internet, satellite, remote sensing for early warning, telemetry and meteorology, etc. can equally be of abundant utility in executing rescue, response and rehabilitation activities.

This time the Provincial Disaster Response Plan -2017 has been divided into five chapters. First chapter is about the provincial profile, while the second chapter deals with all sorts of disasters and their management in brief. The third chapter relates to the weather forecast of the month of June 2017. Fourth chapter is about the Flood Contingency Plan and the last chapter delineates some of the recent initiatives taken by PDMA Punjab.

This Disaster Response Plan aims at assisting PDMA and all other stakeholders in fighting any emergency and its ensuing events. Sincere efforts have been put in to make the plan a practicable action guideline for all institutions. Now, it is the responsibility of all concerned to go through the Plan seriously, and make arrangements for tapping maximum benefit out of it.

MUDASSIR WAHEED MALIK
DIRECTOR GENERAL
PROVINCIAL DISASTER MANAGEMENT AUTHORITY PUNJAB



MESSAGE FROM SMBR/CHAIRMAN PDMA

Disaster Management is the coordination and integration of all activities necessary to build, sustain and improve the capability to prepare for, protect against, respond to and recover from any disaster. Such action has to be multi-jurisdictional, multi-sectoral, multi-disciplinary and multi-resource initiative. Therefore, it is vital that the Provincial Government, District Administrations, Civil Society Organizations (CSOs) and the private sector discharge their respective roles and responsibilities and complement each other in achieving shared goals of disaster management.

In its commitment to safeguard the lives, properties, livestock, crops and livelihoods of the vulnerable communities of flood prone areas, the Provincial Disaster Management Authority, Punjab has devised Provincial Disaster Response Plan (PDRP) for the year 2017. Standard Operating Procedures (SOP) for all concerned Government Departments have been chalked out through consultative process. Roles and responsibilities of all departments have been defined and fixed in accordance with their overall mandate. Disaster Risk Reduction has been added to this plan as a cross cutting theme. Provincial Disaster Management Authority in collaboration with other Government Departments will make every possible effort to keep vulnerable communities safe.

The Punjab Government with the grace of Allah is prepared for any calamity or disaster under the overall direction and supervision of the Honorable Chief Minister Punjab.

DR. MUHAMMAD SAQIB AZIZ
SMBR/CHAIRMAN PDMA, PUNJAB



MESSAGE FROM CHIEF SECRETARY PUNJAB

Emergency and disaster contingency planning starts with considering the types of situations that can disrupt or impede normal life. Identifying and assessing common emergencies and disasters is essential for planning in order to ascertain and analyze your capacities to respond and minimize the effect of the same.

In an event of disaster, local officials must know whom to contact for assistance and understand the roles and responsibilities of all Government agencies involved in the response to effectively coordinate recovery efforts. This aspect of contingency planning has been specially incorporated in the Provincial Disaster Response Plan - 2017.

I expect all the concerned authorities to ensure relevant actors are familiar with emergency plans, procedures and standardized emergency management systems through dissemination and training where needed.

CAPT. (RETD) ZAHID SAEED
CHIEF SECRETARY PUNJAB

GLOSSARY OF ACRONYMS

AC	Assistant Commissioner
ADIO	Assistant Disease Investigation Officer
BHU	Basic Health Unit
CBO	Community Based Organization
CCCC	Command, Control and Communication Center
CDA	Cholistan Development Authority
CERC	Central Emergency Response Committee
C&W	Communication and Works Department
DC	Deputy Commissioner
DGHS	Directorate General Health Services
DHQ	District Headquarter Hospital
DPO	District Police Officer
DRF	Disaster Response Force
DRTA	District Regional Transport Authority
EPD	Environment Protection Department
FAO	Food and Agriculture Organization
FFC	Federal Flood Commission
IDP	Internally Displaced Persons
LDA	Lahore Development Authority
LG&CD	Local Government and Community Development
LWMC	Lahore Waste Management Company
MCs	Metropolitan / Municipal Corporations

MISP	Minimum Initial Service Package
NADRA	National Database and Registration Authority
NDMA	National Disaster Management Authority
NEOC	National Emergency Operation Center
NFI	Non Food Items
NGO	Non-Governmental Organization
NHA	National Highway Authority
NLC	National Logistics Cell
NTC	National Telecommunication Corporation
OCHA	Office for the Coordination of Humanitarian Response
OMC	Oil Marketing Company
PDMA	Provincial Disaster Management Authority
PHA	Parks and Horticulture Authority
PHED	Public Health Engineering Department
PID	Provincial Irrigation Department
PITB	Punjab Information Technology Board
POL	Petroleum Oil & Lubricants
PRCS	Pakistan Red Crescent Society
PTA	Pakistan Telecommunication Authority
RHC	Rural Health Center
SUPARCO	Space and Upper Atmosphere Research Commission
THQ	Tehsil Headquarter Hospital
WFP	World Food Program
WPP	Water Purifying Pills

DISASTER RELATED TERMS

CAPACITY

It is the combination of all the strength and resources available within a community, society or organization that can reduce the level of risk, or the effects of a disaster. Capacity may include physical, institutional, social or economic means as well as skilled personnel or collective attributes such as leadership and management.

CAPACITY BUILDING

Efforts aimed to develop human skills or societal infrastructure within a community or organization needed to reduce the level of risk. In extended understanding, capacity building also includes development of institutional, financial, political and other resources, at different levels of the society

CLIMATE CHANGE

The climate of a place or region is changed if over an extended period (typically decades or longer) there is a statistically significant change in measurements of either the mean temperature or variability of the climate for that region

CONTAMINATION

The word *contamination means* to pollute. Whether it is food, air, or water, when you *contaminate* something, you make it impure or hazardous. *Contaminate* comes from the Latin word *contaminare meaning* “made impure”.

COPING CAPACITY

The means by which people or organizations use available resources and abilities to face a disaster. In general, this involves managing resources, both in normal times as well as during crises or adverse conditions.

DEHYDRATION

Dehydration is a condition caused by the excessive loss of water from the body, which causes a rise in blood sodium levels. Since dehydration is most often caused by excessive sweating, vomiting, or diarrhea, water loss is usually accompanied by a deficiency of electrolytes.

DISASTER

A serious disruption of the functioning of a community or society causing widespread human, material, economic

or environmental losses which exceed the ability of the affected community or society to cope using its own resources. It results from the combination of hazards, conditions of vulnerability and insufficient capacity to reduce the potential negative consequences of risk

DISASTER RISK MANAGEMENT

It is the comprehensive approach to minimize the adverse impacts of a disaster. DRM encompasses all actions taken before, during, and after the disasters. It includes activities on mitigation, preparedness, emergency response, recovery, rehabilitation, and reconstruction

DISASTER RISK REDUCTION

The measures aimed to minimize vulnerabilities and disaster risks throughout a society, to avoid (prevention) or to limit (mitigation and preparedness) the adverse impacts of hazards, within the broad context of sustainable development.

EARLY WARNING

The provision of timely and effective information, through identified institutions, to communities and individuals so that they could take action to reduce their risks and prepare for effective response.

EMERGENCY MANAGEMENT

The management and deployment of resources for dealing with all aspects of emergencies, in particularly preparedness, response and rehabilitation

EPIDEMIC

An outbreak or unusually high occurrence of a disease or illness in a population or area, epidemic is an outbreak of a disease that spreads rapidly among individuals in an area or population at the same time.

FORECAST

Estimate of the occurrence of a future event. This term is used with different meanings in different disciplines.

HAZARD

Anything that have the Potential of damaging physical event or phenomenon that may cause the loss of life or injury, property damage, social and economic disruption or environmental degradation. Hazards can include natural (geological, hydro meteorological and biological) or induced by human processes (environmental degradation and technological hazards). Hazards can be single, sequential or combined in their origin and

effects. Each hazard is characterized by its location, intensity, frequency and probability.

HAZARD ANALYSIS

Identification, studies and monitoring of any hazard to determine its potential, origin, characteristics and behavior.

INFESTATION

Infestation is the state of being invaded or overrun by pests or parasites. It can also refer to the actual organisms living on or within a host.

LAND-USE PLANNING

Branch of physical and socio-economic planning that determines the means and assesses the values or limitations of various options in which land is to be utilized, with the corresponding effects on different segments of the population or interests of a community taken into account in resulting decisions. Land-use planning can help to mitigate disasters and reduce risks by discouraging high-density settlements and construction of key installations in hazard-prone areas, control of population density and expansion, structural and non-structural mitigation measures undertaken to limit the adverse impact of natural hazards, environmental degradation and technological hazards

NATURAL HAZARDS

Natural disasters or phenomenon occurred on earth that may constitute a damaging event. Natural hazards can be classified by origin namely: geological, hydro meteorological or biological. Hazardous events can vary in magnitude or intensity, frequency, duration, area of extent, speed of onset, spatial dispersion and temporal spacing.

PREPAREDNESS

Activities and measures taken in advance to ensure effective response to the impact of hazards, including the issuance of timely and effective early warnings and the temporary evacuation of people and property from threatened locations

PREVENTION

Activities to ensure complete avoidance of the adverse impact of hazards

PUBLIC AWARENESS

The process of informing the general population about the increasing levels of consciousness, risks and how

people can reduce their exposure to hazards. This is particularly important for public officials in fulfilling their responsibilities to save lives and property in the event of a disaster

RECOVERY

Decisions and actions taken after a disaster with a view to restoring or improving the pre-disaster living conditions of the stricken community, while encouraging and facilitating necessary adjustments to reduce disaster risk.

RELIEF /RESPONSE

The provision of assistance during or immediately after a disaster to meet the life preservation and basic subsistence needs of those people affected. It can be of an immediate, short-term, or protracted duration.

RESILIENCE /RESILIENT

The capacity of a community, society or organization potentially exposed to hazards to adapt, by resisting or changing in order to maintain an acceptable level of functioning. Resilience can be increased by learning from past disasters for better future protection and to improve risk reduction measures.

RETROFITTING (OR UPGRADING)

Reinforcement of existing buildings and structures to become more resistant and resilient to the forces of natural hazards

RISK

The chances of losses (deaths, injuries, property, livelihoods, economic activity disrupted or environment damaged) resulting from interactions between hazards and vulnerable social conditions. Risk is expressed as $\text{Risk} = \text{Hazards} \times \text{Vulnerability}$. Some experts also include the concept of exposure to refer to the physical aspects of vulnerability

RISK ASSESSMENT / ANALYSIS

A methodology to determine the nature and extent of risk by analyzing potential hazards and evaluating existing vulnerability that could pose a potential threat to people, property, livelihoods and the environment



CHAPTER 1

THE PUNJAB PROVINCE

1.1 THE PROVINCIAL PROFILE

Punjab, the land of five rivers, is the most populous province of **Pakistan** with approximately 56% of the country's total population. It has an area of 79,284 square miles (205,345 square km) and a population of exceeding 100 million. It consists of 36 administrative districts and 9 administrative divisions and is bordered by the Indian state of **Jammu and Kashmir** to the northeast, the Indian states of **Punjab and Rajasthan** to the east, **Sindh** to the south, **Baluchistan and Khyber Pakhtunkhwa** to the west, and **Islamabad and Azad Kashmir** to the north. Punjab is the main food basket of the country, generally land is fertile land, a large portion of Punjab is arable owing to the system of the five rivers which flow through the province namely Chenab, Jhelum, Ravi, Sutlej and Sindh or Indus River itself. These rivers traverse the Province from north to south making the province the most heavily irrigated and fertile land on earth, while the south has deserts of Cholistan with a barren landscape facing water scarcity and heavy dependency on rain. Weather extremes are notable from the hot and barren south to the cool and scenic hills of the north.

In Punjab the temperatures begin to rise in the middle of February leading to spring which continues until mid-April. April onwards the summer hot weather sets in causing the air to rise and creating low pressure areas. Moisture laden winds from Indian Ocean rush into the low pressure region directly above Punjab and other Provinces of Pakistan and India. This phenomenon is known as the southwest monsoon. June and July are oppressively hot with temperatures hovering as high as 50°C. These rising temperatures cause the monsoon winds to blow into areas above Punjab and release their moisture in the form of excessive rains. The monsoon rains are usually observed between July and September. Furthermore, El Nino phenomenon acts as catalyst to the monsoon rains. This weather pattern causes heavy rain and seasonal floods in the province. Flooding in rivers is generally caused by heavy concentrated rainfall in the catchments during the monsoon season, which is sometimes augmented by snowmelt flows. These large seasonal variations further aggravate the conditions and the intensity of floods at times is increased several folds due to sudden cloud bursts as was the case in 2012 in the river Indus at Rahim Yar Khan and 2014 in Chenab at Sialkot.

FIGURE 1.1: RIVERS OF PUNJAB



1.2 PUNJAB'S POTENTIAL DISASTER PROFILE

The province of Punjab is vulnerable to most kinds of disasters, with particularly river flood and hill torrents frequently occurring since 2010. Punjab faces floods in varying intensity almost every year. There have also been examples of tornadoes and earthquakes in the province but their frequency have been quite low, with most of the Punjab being relatively safe with regards to vulnerability to earthquakes. Some areas such as Murree and parts of the Rawalpindi Division are located on the fault line hence vulnerable to earthquakes. Apart from above mentioned areas an old fault line is activated near Nankna Sahib. Tornadoes too have been a rare happening in Punjab but

nevertheless a force of nature to reckon with.

Punjab's geographic location and climatic conditions make it more vulnerable to monsoon floods and droughts in the southern areas. The effects of climate change and associated variability in the monsoons means that the occurrence and intensity of floods have significantly been increased in the last few years. Punjab has witnessed floods of various intensities in the last seven years due to climatic changes. The worrisome facts are that different rivers have caused flooding in different areas of the province including riverine, urban and flash floods (hill torrents) during last seven years

TABLE 1.1: FLOOD TYPE AND DISTRICTS' VULNERABILITY

Disaster Type		Vulnerable Districts / Areas
Riverine Flooding	Indus	Mianwali, Bhakkar, Layyah, Muzaffargarh, DG Khan, Rajanpur, R.Y. Khan
	Jhelum	Jhelum, M.B. Din, Khushab, Jhang,,
	Chenab	Gujranwala, Gujrat, Sialkot, Sargodha, Chiniot, Hafizabad, Jhang, Khanewal, Multan.
	Ravi	Lahore, Sheikhupura, Nankana Sahib, Okara, Sahiwal, Khanewal
	Sutlej	Kasur, Pakpattan, Vehari, Lodhran, Bahawalnagar, Bahawalpur
Flash Floods		Mianwali, D.G. Khan, Rajanpur
Urban		Lahore, Rawalpindi, Gujranwala, Sialkot, Faisalabad, Narowal, Sheikhupura, Multan
Droughts		The areas of Cholistan in district Bahawalpur, Bahawalnagar and R.Y. Khan
Forest Fires		Changa Manga, Pabbi, Margala and Murree

CHAPTER 2

TYPES OF DISASTERS AND THEIR MANAGEMENT

2.1 FLOODS

2.1.1 CHARACTERISTICS OF FLOOD VULNERABILITY OF PUNJAB

Riverine floods, although, are characterized by heavy water flow but generally give enough cushion to authorities to vacate vulnerable and endangered areas as experienced in 2014. However, contrary to this Hill Torrents, are of less intensity, but create significant dent to lives and properties of people because their occurrence is sudden and water flow with gravitational pull play havoc and destroy everything which comes in its way. The western districts of the Province face the risk of flash floods originating in the western mountain ranges. Districts such as Rajanpur, DG Khan, Mianwali and Khushab are vulnerable to flash floods due to heavy rains. More than five million cusecs of water flowed into the Indus River from these districts during the floods of

2010. Following are the characteristics of flood and vulnerability of districts in Punjab:-

RIVERINE FLOODS (Multan, Muzaffargarh, Layyah, DG Khan, Jhang, Chiniot, Hafizabad, Mianwali, Jhelum, Mandibahudin, Kasur, Jhelum, Sialkot etc.)

HILL TORRENTS (Khushab, D G Khan, Rajanpur, Mianwali)

URBAN FLOODS(Lahore, Rawalpindi ,Sialkot, Gujranwala and Multan)

NULLAH/STREAMS (Sialkot, Narowal, Gujranwala, Sheikhupura, Gujrat, Rawalpindi etc.)

2.1.2 BRIEF HISTORY OF FLOODS IN PUNJAB

Punjab was hit by super flood in 2010 during monsoon season with devastating effect on 11 districts. Rehabilitation of displaced flood affectees and damaged, infrastructure took several months. This included the building of 22-Model Villages and completion of cash compensation program through "Watan Card." This benefitted 622,092 in phase-I and 345,859 affectees in phase-II.

Although Punjab experienced floods over the years 2011-2013, but the intensity of these floods were not alarming. In 2014 Southern Nullahs and River Chenab swelled its banks affecting adjoining districts of Punjab; mainly districts of Jhang, Muzafargarh, and Multan. Successful early warning resulted into

minimal losses of lives but huge financial losses (crops, houses, properties and social infrastructure) were incurred due to the floods in 2014. The rapidly changing weather patterns, climatic changes, urbanization and choking of natural ways have left more than half of the province at the risk of riverine floods and hill torrents. The second largest river is Chenab which remains deserted from Chiniot onward to Head Trimmu. It flows through heavily populated districts of Gujrat, Gujranwala, Sargodha, Jhang, Chiniot, Hafizabad and Multan hence poses great threat to adjoining population. Floods in 2014 have caused very heavy losses to lives and properties of adjoining population. River flow was recorded above .9 million cusec flow in 2014.

FIGURE 2.1: DISTRICTS AFFECTED IN FLOOD 2010

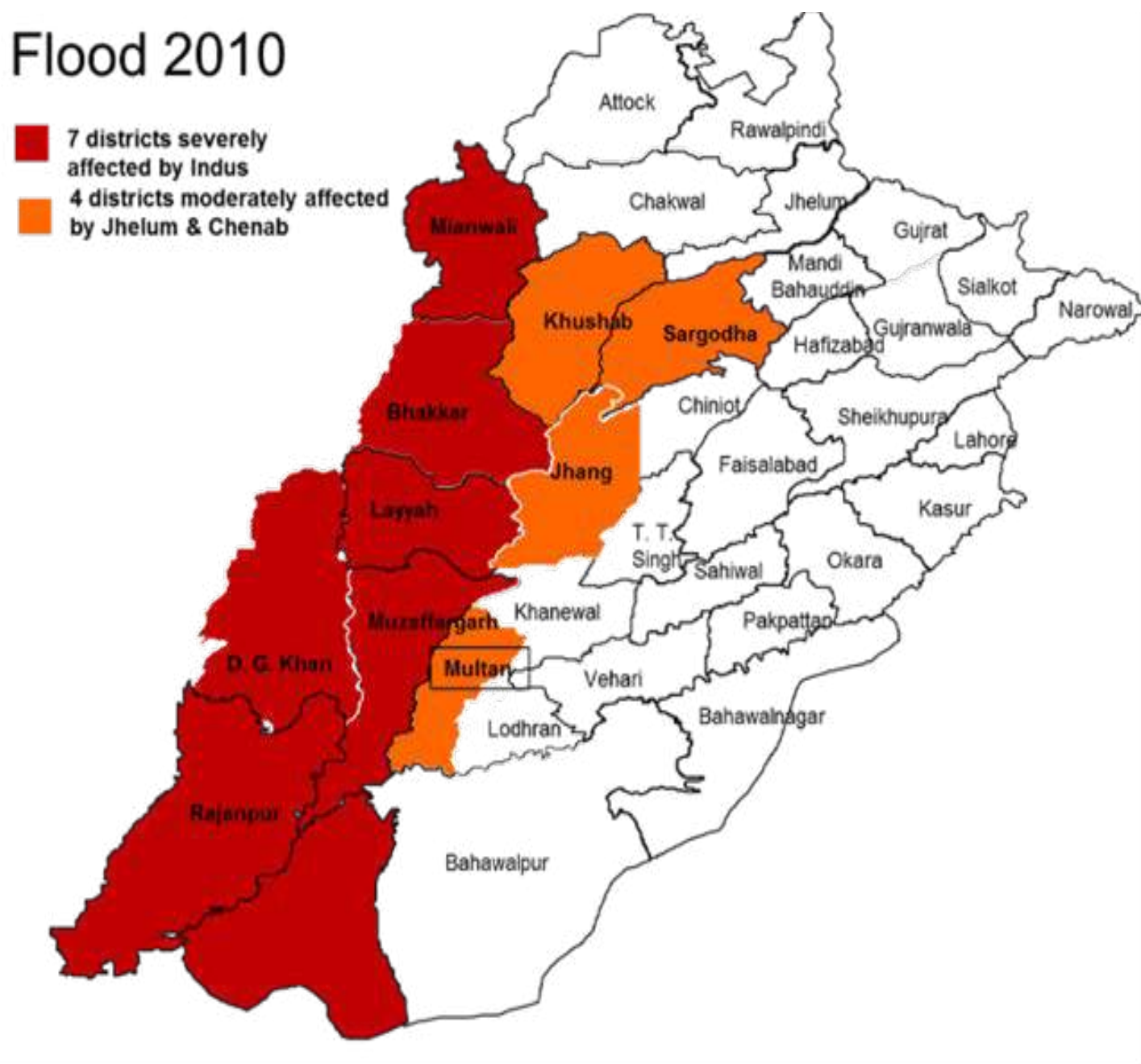
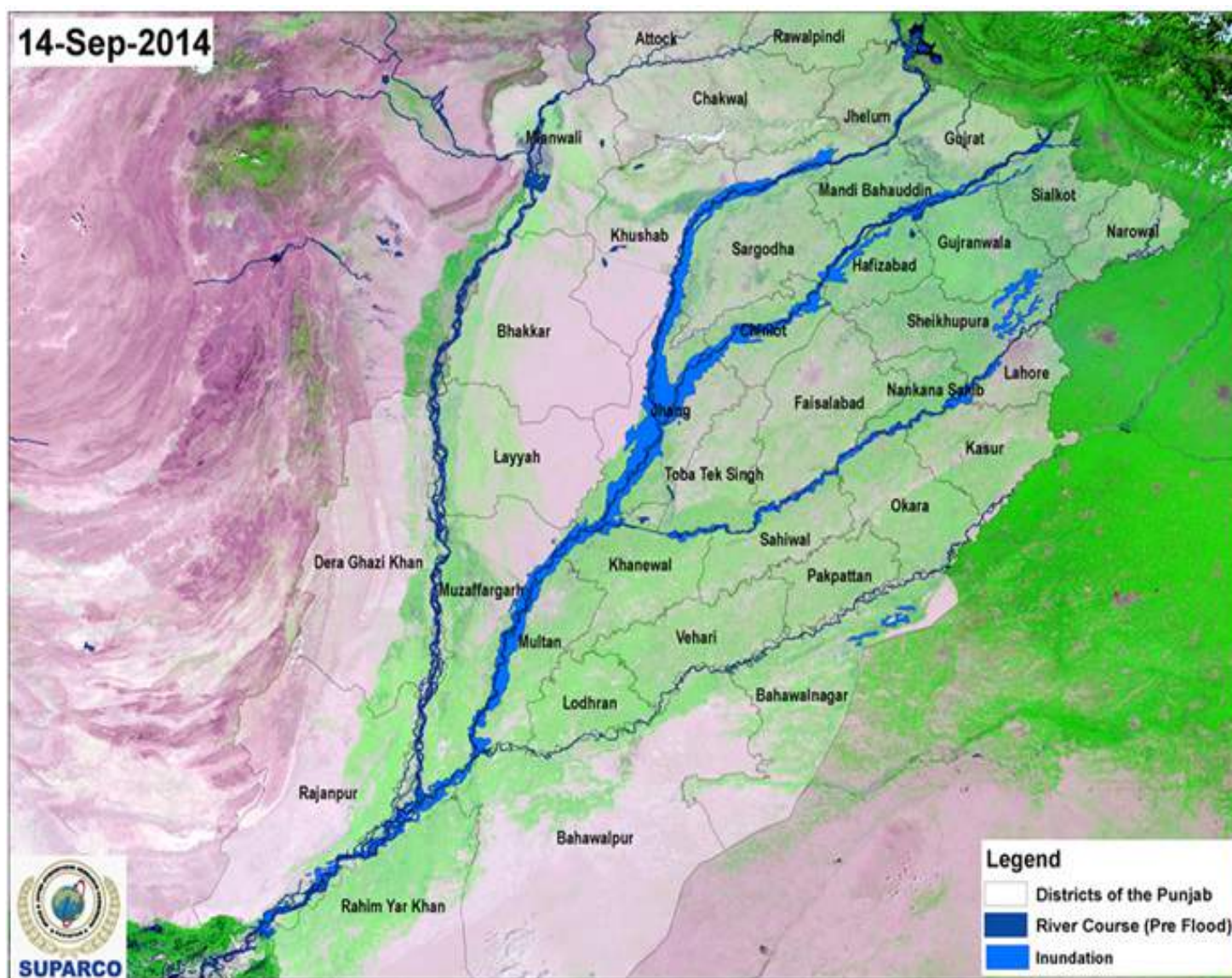


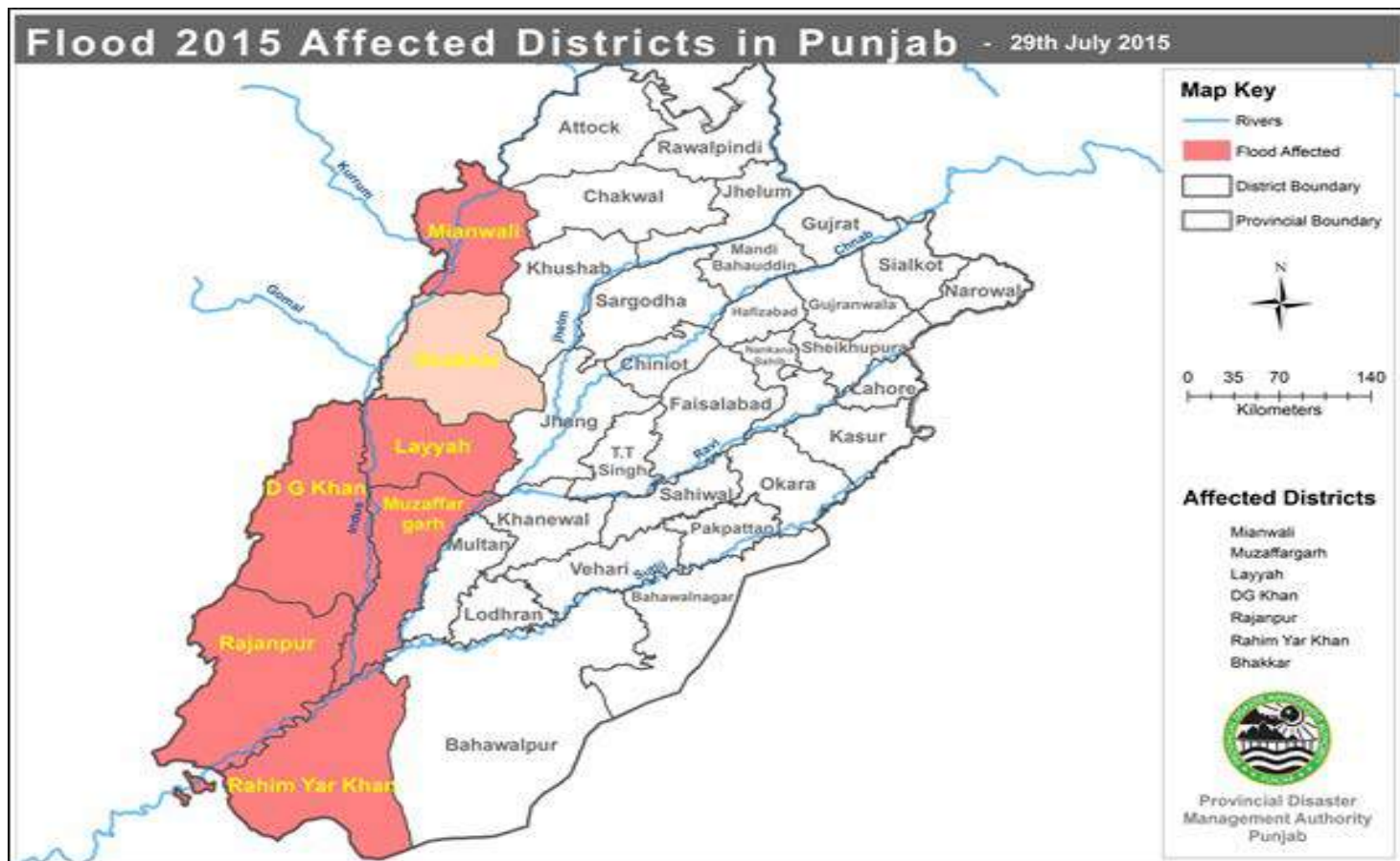
FIGURE 2.2: RIVERS IN SEPTEMBER 2014 FLOOD



In 2014 an unprecedented high flood in the **Chenab** River posed a serious threat to Jhang, Muzaffargarh and Multan City causing huge losses in economic terms. Whereas loss of life

was averted through an effective early warning but financial losses in terms of crop damage, infrastructure damage and damage to properties ran into billions of rupees.

FIGURE 2.3: AFFECTED DISTRICTS IN 2015 FLOOD



Another threat of sheet / shallow floods in the shape of numerous water channels flowing through the Pyramidal range tends to cause flooding across the populous districts of Gujranwala and Lahore division. Urban flooding is yet another hazard that Punjab has to be prepared for. The Lai Nullah in Rawalpindi poses a serious threat to the city as heavy rains along Margalla Hills can cause overflowing of this water channel beyond its capacity. Lahore, Gujranwala, Sialkot, Narowal, Sheikhupura are similar examples of population centers that face the risk of Urban Flooding due to various drain channels like NullahDeg, Aik, Bhed, Basantar etc.

districts of the Punjab province. PDMA, Government of Punjab in immediate response provided 55,600 tents, 174,750 Food Hampers, 82,000 mineral water bottles, and 35,150 mosquito nets, among others. For immediate Rescue and Relief Operations at Districts' level an amount of PKR 588 million was disbursed to the District Coordination Officers of the concerned districts.

In 2015 apart from riverine flood flash flooding also been observed in DG Khan, Rajanpur and Mianwali district due to torrential rains. Resultantly, heavy flash floods observed due to devastating overflowing of hill torrents. Namal Dam, Mianwali was also filled its maximum capacity and de-watering had to done to save the dam.

Incessant rains during July 2015 led to flooding in 15

FIGURE 2.4: HILL TORRENTS OF DG KHAN AND RAJANPUR

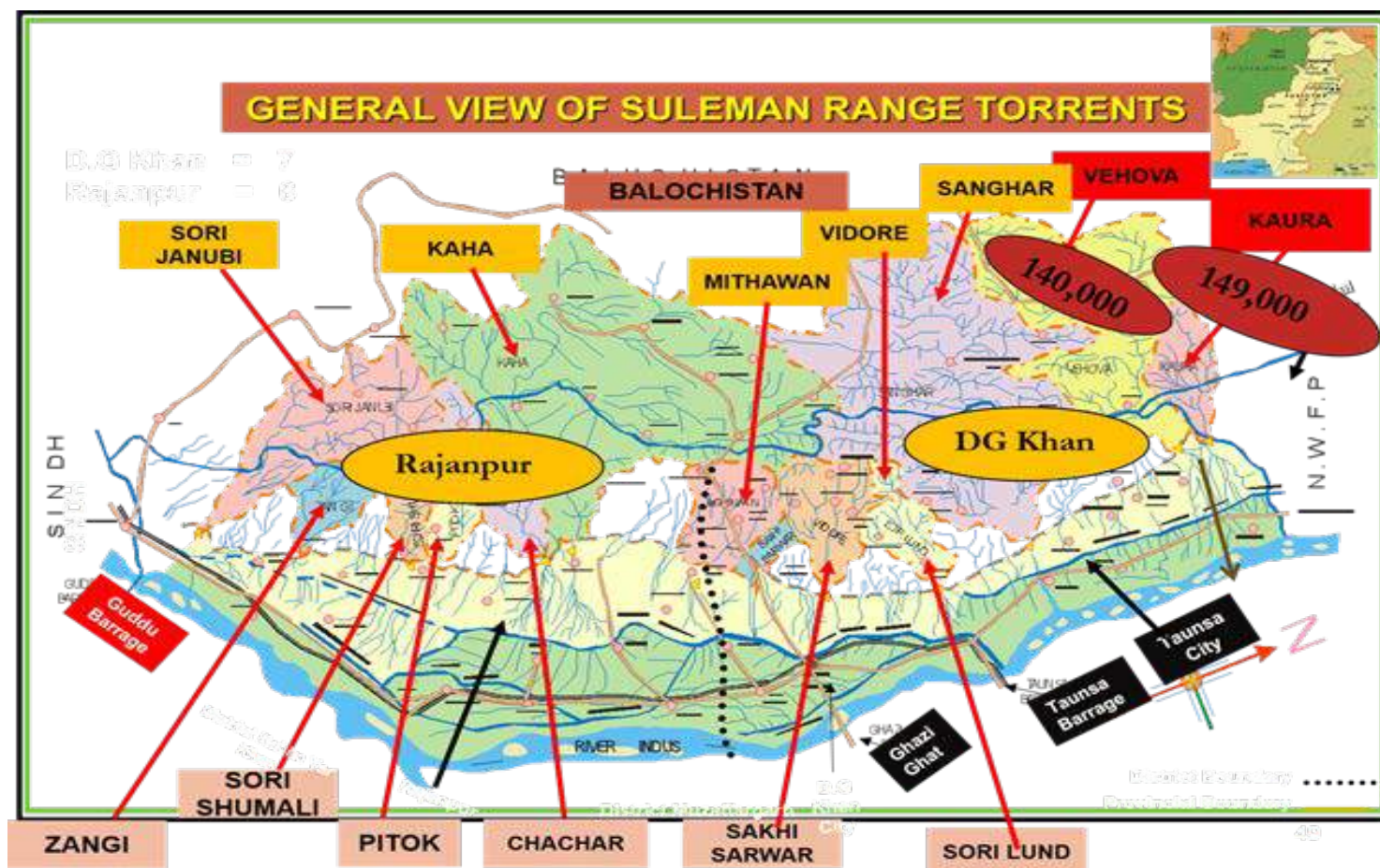


FIGURE 2.5: HILL TORRENT, KAHA RAJANPUR IN 2015



2.1.3 RIVERS OF THE PUNJAB

River Indus is the largest of all rivers in Pakistan and has the capacity to accommodate huge flows of water. Most of the Indus River is not in the vicinity of major urban settlements thus there is less threat to nearby population and properties. Being the main river, the Indus remains in flow throughout the year, keeping residents of adjoining areas vulnerable and conscious of the possibility of flooding. Keeping history of floods in view, all structures have also been designed accordingly and have been tested in 2010 Super Floods.

The eastern rivers i.e. the **Ravi** and **Sutlej** do not have heavy water flows due to the construction of dams upstream in India but whenever there are heavier than usual monsoon rains in the catchment areas, considerable discharges are released into the Pakistani territory causing floods, such as the floods in river **Sutlej** in 2013. Since these eastern rivers have negligible flows, nearby land owners have encroached

upon and cultivated the area. Due to encroachment from nearby populations, even low intensity floods in these rivers causes severe damage to crops and properties.

River **Jhelum** flows throughout the year and its flow is regulated from Mangla aDam, hence, to some extent, becomes possible to avoid flood situation. Nevertheless, Jhelum overflowed in 2010 and 2014 due to delay in decision making and miscalculation. Situation with Dam filled to its maximum limits and glacial melt activity coupled with heavy rain may lead to floods. The river Jhelum also merges in **Chenab** at Trimmu Head works in Jhang District and cumulatively they pose serious flood risk to the downstream regions. The first head works on this river are at Marala, which is immediately south of the Indian occupied territory of Jammu. Expectancy of damage to lives, properties and livelihood remains very high in case of flooding in eastern rivers.

FIGURE 2.6: RIVERS MORPHOLOGY IN PUNJAB

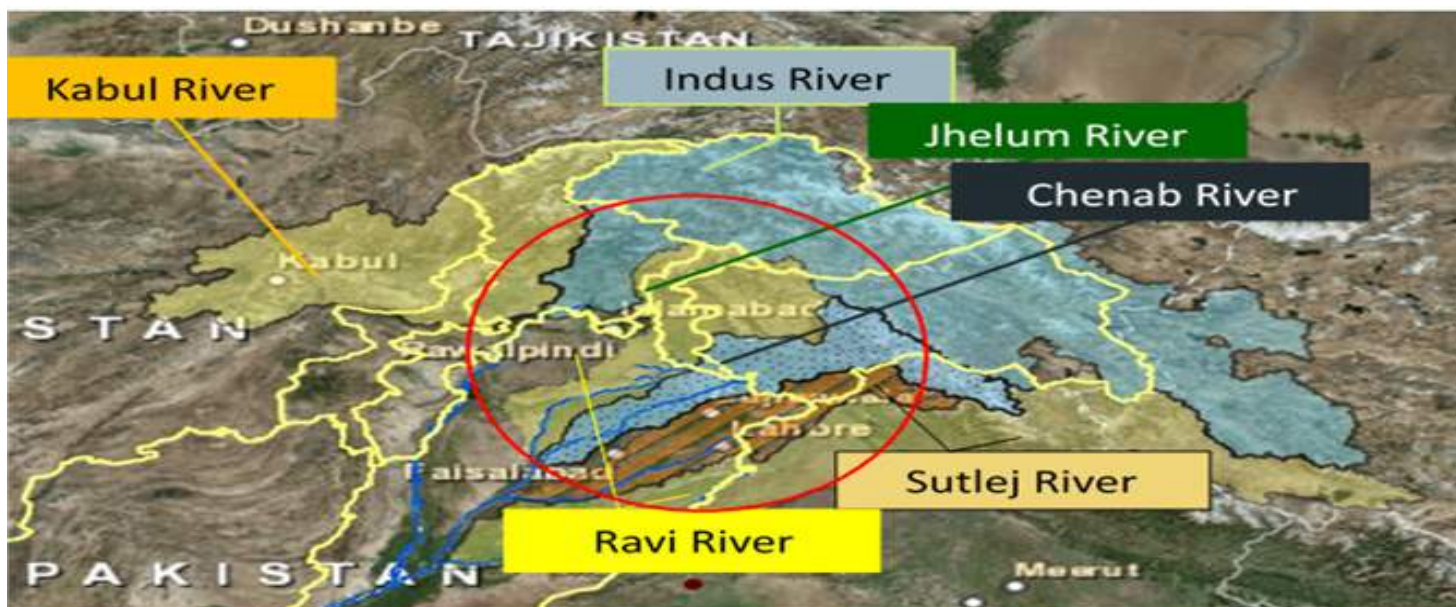


TABLE 2.1: 7 YEARS FLOOD HISTORY OF PUNJAB

YEARS	2010 (July)	2011 (Sep)	2012 (Sept)	2013 (Aug)	2014 (Sep)	2015(July)	2016
Cause of flooding	Indus, Chenab/Jhelum	Sutlej & Hill Torrents	Hill Torrents Rains in South	Chenab & Sutlej Nullahs	Jhelum/ Chenab Nullahs	Indus, Torrential Rains	No flood situation witnessed in 2016
No of districts affected	11	12	3	9	16	8	-
No of Villages affected	1810	335	110	1628	3484	558	189*
Population Affected	6.2 m	.026 m	.389 m	.120 m	2.47 m	0.445	-
No of deaths	262	4	60	109	286	35	29**
Household damage	353,141	1284	25,556	3,378	83,593	16,374	287***
Area affected	5.23 MA	.270 MA	1.96 MA	.195 MA	2.41 MA	0.341 MA	-
Livestock perished	3572	59	898	81	737	0	-
Expenditure by PDMA	34,135.42 m	345.75m	1,274.02m	663.44m	17,737.35m	1.65	-

*Villages were affected due to drought and river erosion

**Deaths occurred due to heavy rainfall in Lahore, Faisalabad, Chiniot , Hafizabad, Gujrat , Mandi Bahaudin, Sialkot

*** 3 houses were damaged in Shekhupura, 1 in Muzaffargarh due to rainfall and 283 houses were destroyed in Layyah due to river erosion.

2.2. DROUGHT MANAGEMENT

2.2.1 AN OVERVIEW

God has blessed Punjab Province with variety of soil types, ranging from Mountainous areas of Murree to deserts of Thal and Cholistan with peculiar set of environment. On one hand, most of the districts of Punjab are affected by flood disaster in Monsoon season and on other hand life is endangered due to drought spell in desert areas of Punjab. Although frequency of drought occurrence is not very high yet province faces cyclic process of drought almost once in a decade. Drought is long term phenomenon, it approaches slowly and gradually and same happens with recovery and rehabilitation process.

Canal network and road network has significantly brought down the impact of drought in Thal area which comprises of Khushab, Jhang, Mianwali, Bhakkar, Layyah and Muzaffargarh districts. Almost all farmers have put piece of their land under tube well irrigation and have secured their livestock by growing irrigated

fodder along with rained cultivation. Apart from tube well farmers have installed hand pumps for provide ample to their livestock for drinking purposes. During drought they feed their livestock with fodder raised o tube well irrigation supplementing with concentrated feed.

Drought normally affects the populations by creating water shortage for drinking of humans and animals and similarly affects natural vegetation as well agricultural crops of that area resulting into shortage of food items. However, this general formula doesn't apply on our situation because Punjab has separate food basket and drought in deserts doesn't create significant dent on that in drought conditions too. Nevertheless, water scarcity affects natural vegetation of desert which is the sole source of feed for livestock. On the face of it, drought conditions create drinking water shortage to population of desert solely dependent on Tobas.

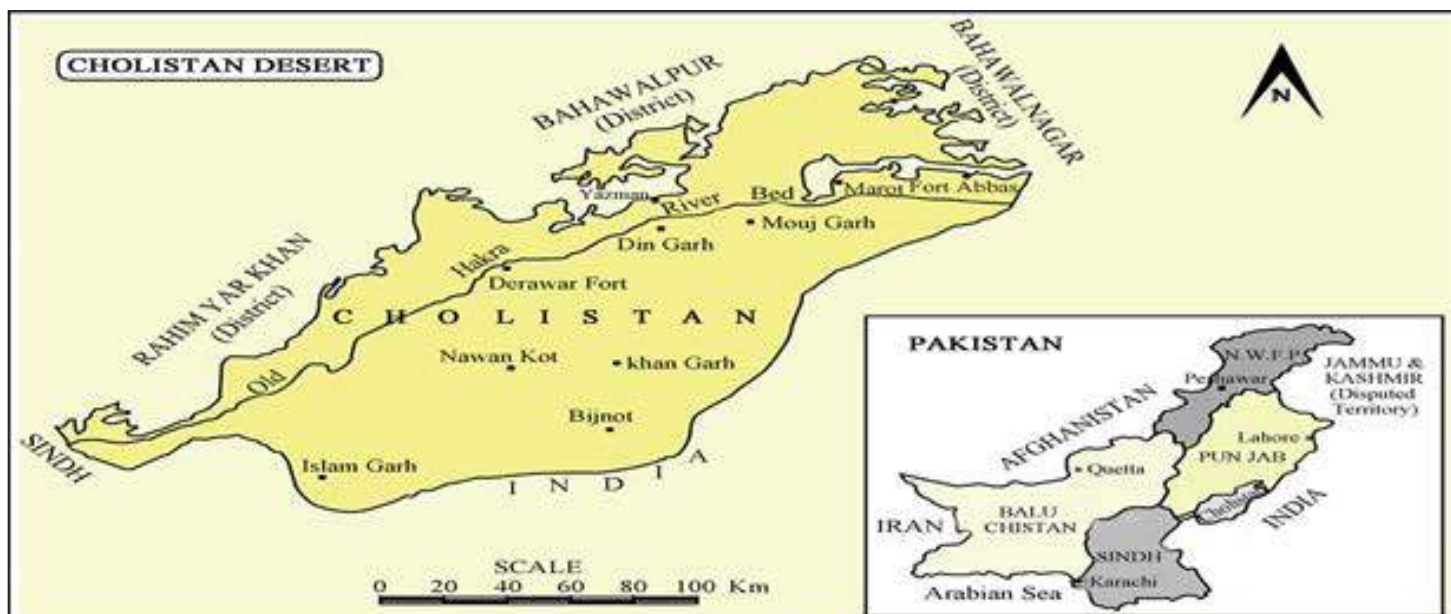
2.2.2 CHOLISTAN

There are two main deserts (ranges) of Punjab Thal and Cholistan. Both ranges are rain fed and get affected by drought badly. However, Thal, after the construction of canal network, has got plenty of underground sweet water through seepage from canal system which is being used for drinking as well as irrigation purposes. Most of the farmers have installed tube wells to irrigate their land leveled for general cropping and fodder cultivation.

However, Cholistan, which comprises of part of Rahim Yar Khan, Bahawalnagar and Bahawalpur districts,

is still prone to drought disaster. There is likelihood of occurrence of drought which can impact human as well animal lives. To understand phenomenon of drought and its impact on human and animal lives, we will have to understand edaphic and climatic factors of the area along with human interventions. Cholistan comprises of sandy soil with meager annual precipitation, rain water is collected in low lying areas of deserts (termed as Toba) and most of the population is settled near these Tobas. Tobas have been the sole source of drinking for human and livestock for centuries. Wind erosion is common phenomenon of Cholistan desert.

FIGURE 2.7: THE CHOLISTAN DESERT



2.2.3 DROUGHT STAGES

Drought stage levels are set in proportional to remaining levels of water in Tobas (keeping expected season / time of precipitation in view).

TABLE 2.1: DROUGHT STAGES

STAGES	STATUS	LEVEL OF WATER	ACTION
STAGE-1	Moderate shortage	75% level as compared to normal year & time	Alert
STAGE-2	Severe shortage	50% level as compared to normal year & time	Watch
STAGE-3	Extreme shortage	25% level as compared to normal year & time	Warning
STAGE-4	Emergency shortage	<25% level as compared to normal year & time	Emergency

FIGURE 2.8: DROUGHT CONDITIONS



Toba water which is the sole source of drinking water for human and animals which is already contaminated, gets further infested since both animal and human being are drinking same water. Worms, bacteria, fungi and

many more get concentrated with muddy water when Tobas get dry. Population (human and livestock) not only face scarcity of drinking water but compelled to muddy contaminated water with lot of pests.

2.2.4 SOPS FOR DROUGHT MANAGEMENT

- Prepare geo referred map of entire Cholistan with villages, canals, Tobas, roads, health facilities, veterinary facilities, water supply schemes and any other important facilities or points.
- Prepare list of families which are dependent on water supply or Toba with contact numbers along with members of family and number and type of animal owned by family
- Prepare list of contact persons / social activists whom we can contact during disaster
- Prepare list of focal persons of all concerned department with contact numbers
- De-siltation of Tobas on regular basis to enhance capacity of Tobas
- Periodic cleaning of water supply lines, storage tanks and ensure repair & maintenance of Machinery
- Ensure water bowsers, tractor trollies and other drought emergency related machinery is in order and in functional condition
- Water levels in Tobas are at par with desired levels at any particular time of the year
- Prepare list of livestock owners with number of animals (sheep, goat, cow and camel etc.) and their geo location
- Arrange necessary medicines, vaccine and concentrated feed for livestock
- Establish camps for livestock with all facilities (water points and deworming facilities etc.) and mobilize livestock owners to bring their herds on designated Camps.
- Impose ban on grazing in desert areas since it can lead to destruction of natural vegetation, moreover, drought itself changes the chemistry of fodder due to moisture shortage and some plants may become poisonous.
- Increase frequency of meeting with livestock owners and influential of affected area
- Issue guidelines for handling livestock during stages of drought
- Drought Declaration will be issued by the concerned district administrations
- Prepare Toba / Village wise list of drought affectees with levels / stages of drought with details
- Launch orientation / awareness campaign for all contact persons / social activists
- Notify District, Tehsil and Union Council level focal persons and make it public for the ease and better coordination.
- Mark / establish relief camps at nearest locations for population of various Tobas / villages
- Intimate concerned population through contact persons and social activists to shift to their dedicated camp
- Make special arrangements for worst hit area with all facilities for human and livestock
- Prepare inventory lists of all necessary items, food and non-food, medicines etc.
- Prepare projected lists of items required for stock pile Establish.
- Prepare / seek list of affected population of desert area under drought threat
- Prepare special list of vulnerable population i.e. pregnant women, infants, old age people and disables
- Prepare list of prevalent / potential to outspread diseases in drought condition
- Prepare list of available medicines keeping drought disaster and related diseases in mind
- Prepare list of medicines which are required to fill the gap and send request to concerned quarters for their purchase/availability

2.3 EARTHQUAKE MANAGEMENT

2.3.1 EARTHQUAKE IMPACT AND RISK ASSESSMENT

Community awareness, education and disaster resilience is integral to effective response arrangements, as response activities will be far more effective if the community has taken measures to minimize the impacts and consequences of earthquakes (e.g. property damage). Agencies that may be involved in response to an earthquake must have a Contingency Plan in place to ensure their continued ability to respond if a serious earthquake occurs. Furthermore, organizations that have a key role in the provision of lifeline services to the community also need business continuity plans in place so they are able to function to the best of their ability post-emergency.

Earthquakes, unlike many other natural hazards, have the potential to cause catastrophic losses. Although Punjab is popularly considered to have a low earthquake risk, a major earthquake could still occur under a heavily developed and populated area in Rawalpindi Division. The impact of such an earthquake could have widespread consequences throughout Murree and surroundings. An old fault line has re-activated and jolted Punjab in early 2016. Whilst there is a low probability that this event will occur in the foreseeable future, it is important to recognize the potential for such catastrophic impacts.

2.3.2 PROTECTION AND PRECAUTIONARY MEASURES

Although it is not possible to stop / decrease the likelihood of occurrence of Earthquake, however we can minimize or lessen the damage it can cause to the lives and properties of the public residents of earthquake hit area. Earthquake doesn't cause high damage as compared to damage caused by structural collapses. Hence we can save lives and properties of public if;

- Certain standard which are helpful in bearing / withstanding earthquake shocks i.e. building codes are devised and their implementation is ensured in all kind of constructions in public and private sector.
- Electricity supply of earthquake hit area is made shock proof to desired level
- Gas supply is made shock proof and ensured that supply is cut off as quickly as possible
- Ensure alternate communication system in case main communication channel collapse during earthquake and restore alternate communication system if it is also affected
- Ensure that food, nonfood reserves are sufficient and stock piled in earthquake prone area where there is probability of road transport cut off after earthquake shock e.g. Muzaffarabad and Northern areas etc.
- Earthquake emergency related Rescue equipment and machinery are available and are in functional condition; moreover, periodic mock exercises have been conducted to test equipment, machinery. Also make sure that human resources equipped with desired skills required to deal with earthquake emergencies.

FIGURE 2.9: PRECAUTIONARY MEASURES DURING EARTHQUAKE

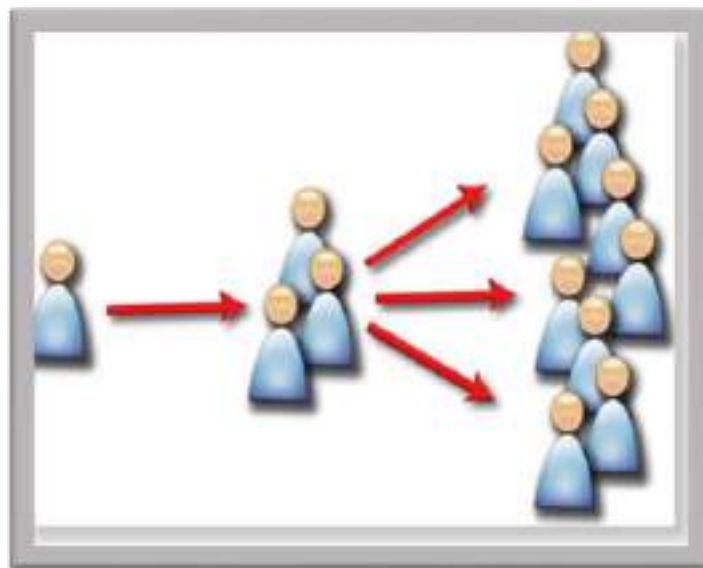


2.4 EPIDEMICS

2.4.1 WHAT IS AN EPIDEMIC?

Epidemic is defined as an outbreak or unusually high occurrence of a disease or illness in a population or area. It is an outbreak of a disease or illness that spreads rapidly among individuals in an area or population at the same time. There is less likelihood of epidemic in Punjab Province because government of Punjab is stressing hard on 100 % vaccination of communicable diseases. Regular National Immunization Days (NID) are being

observed properly since government of Punjab and health department are according due priority to these NIDs. International Institutions are monitoring these activities very closely at all levels. Provincial government has sensitized District Administrations and has passed on very strict instructions for 100 % vaccination of communicable diseases.



Communicable diseases spread through;

- drinking water e.g. diarrhea
- aerial transmission e.g. influenza
- through carrier / vector e.g. dengue and malaria etc.
- spread through several means / contact e.g. HIV AIDS, hepatitis etc.

2.4.2 CONTROL OF COMMUNICABLE DISEASES

Following steps need to be taken, in order to control communicable diseases.

DISTRICT ADMINISTRATION IN COLLABORATION WITH HEALTH DEPARTMENT;

- Should observe all NIDs
- Should ensure 100% vaccination of target groups
- Should immediately report any unusual communicable disease witnessed in any facility or during vaccination operations
- District Administration and health department both should report unusual communicable diseases witnessed in any area
- District Administrations should ensure periodic cleanliness and treatment of water supply lines
- District Administration should ensure periodic checking of water supply lines
- Health Department should ensure periodic sampling and laboratory checks of water sample taken from various schemes and locations

Following steps should be taken, in case any disease is widespread at any place;

- Prepare map of affected population with details of patients with age and sex
- Cancel leaves of all concerned staff (health, District Administration staff etc.)
- Nominate and notify focal persons of all concerned department at various levels (District, Tehsil and Union Council)
- Convene regular meetings of all concerned departments to remain current and updated and plan for future course of action
- Notify hospital for treatment of communicable disease and make necessary arrangements for the patients of that particular disease
- In case of communicable disease, the treatment area in the hospital should be cordoned off
- Orientate media and use it for awareness of general public. Media should be used positively to help convey message to masses
- Prepare fliers, in easy and understandable language, to orientate general public about disease and precautionary measures which can be taken by them to control disease.

2.4.3 ESTABLISHMENT OF DISASTER MANAGEMENT WARDS (DMWS)

It is proposed that each district should establish Disaster Management Ward in all teaching and district level hospitals. (DHQs and THQs)

Disaster management ward should comprise of 20

beds each in teaching hospitals and 10 beds each in all DHQs. The Medical Disaster Management Team (MDMT) should be constituted and notified along with their name and contact details by all teaching and DHQ hospitals comprising of the following team

- a general physician
- a general surgeon
- a neurosurgeon
- an orthopedician



2.5 CHEMICAL DISASTER MANAGEMENT

2.5.1 CHEMICAL DISASTER

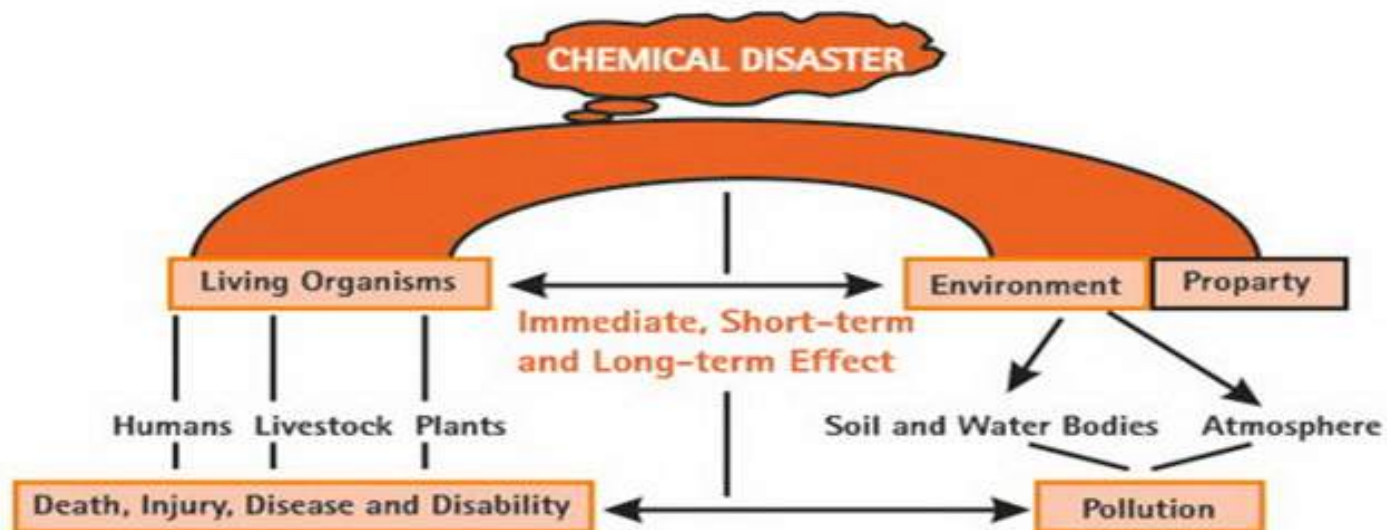
Chemical Incident is defined as an uncontrolled release of a chemical from its containment that either threatens to, or does, expose people to a chemical hazard. Such an incident could occur accidentally or deliberately

Normally, as per government policy, industrial parks are established away from main cities preferable along with main roads where transport and other facilities required for industry are available. However, with the increased population growth, urban settlements have expanded horizontally engulfing industrial states into urban city centers. It is not uncommon to find industrial units which have been surrounded by residential colonies. This is causing manifold damages to the communities in vicinity. Omissions, effluents and gases, are continuously polluting air and ground aquifer. In addition to this, there remains likelihood of explosion or leakage of chemicals causing damage to lives and livelihood of the people. Such incidents worsen situation subsequently by catching fire and causing explosions. Chemical disaster cause manifold damages.

- Chemical disaster may directly cause damage to worker through contact
- Chemicals may cause damage to communities living in vicinity
- Chemical may trigger explosions or fire which can further trigger something new.
- Chemical disaster may cause psychological trauma in addition to above narrated damages.

Owners of industrial units / factories should be made responsible for handling On-Site emergencies through their own means and for that they should be made responsible to maintain an adequate level of preparedness in accordance with their industry related chemicals. For off-site PDMA and DDMA should maintain desired level of preparedness.

FIGURE 2.10: SEQUENCE OF EVENTS IN CASE OF CHEMICAL DISASTER



2.5.2 MANAGEMENT OF CHEMICAL DISASTERS – SOPs FOR DDMA's

- DDMA's should prepare geo referred Map of Industrial parks and individual industrial unit dealing with chemicals with potential to harm human lives directly or indirectly.
- Prepare list of chemical wise industries / factories
- Impart training to Rescue 1122, District Administration and health service providers to deal with chemical disasters
- Conduct regular periodic mock exercises to test equipment, machinery and
- Legal framework / Regulatory provision for management of chemicals should be framed and its implementation should be ensured.
- Integration of safety risk assessment provisions in all environmental appraisal and site clearance tools/process and developmental planning process
- Emphasis on health risk assessment of product and process to be given adequate significance and practice
- A web based Chemical Accident Information and Reporting System developed by provincial Government with the support of PITB for creating data base on chemical accidents.
- Need for a common Information Management System on hazardous chemicals, location/ mapping, processes, storage, handling and a knowledge center to be created as a pool of relevant information resources including failure data, reports, accident analysis records, etc.
- Regular meetings of the Provincial, District and Local Crisis Groups need to be organized to review the off-site emergency plan, monitor post-accident situation, status etc. and forward the meeting reports along with follow-up actions to the nodal ministry.
- Public awareness especially with regard to chemical hazards needs more emphasis.
- DDMA to conduct at least one full scale mock drill for chemical accident every year and forward a report with strength and weakness of the plan.
- Need for Information exchange on chemical accident management-including antidotes, root cause of accident, material safety datasheets, risk reduction measures, etc.
- Chemical Risk Assessment to be an integral part of the Environmental impact assessment and land-use planning, and detailed geo-sensitivity based site risk assessment to be given importance in clearance process.

2.6 FIRE DISASTERS

2.6.1 FIRE DISASTER MANAGEMENT

Fires are the accidents which occur most frequently, whose causes are the most diverse and which require intervention methods and techniques adapted to the conditions and needs of each incident. Depending on the type of fire (nature of the material on fire), meteorological conditions (wind) and the

effectiveness of the intervention, material damage can be limited (a single car, building or production or storage warehouse installation), or affect wide areas (forest or agricultural fires, hydrocarbons, gas or other highly flammable products, storage or piping installations).



2.6.2 CLASSES OF FIRE AND TYPES OF FIRE EXTINGUISHERS

Generally fire is divided into four classes:-

- Class A These are fires that involve some solid material like clothes, paper, junk heap and wood etc.
- Class B These are fires that involve liquid materials like, petrol, gasoline, diesel, oil etc.
- Class C These are fires that involve electrical elements
- Class D These are fires those involve metal

FIGURE: 2.11 TYPES OF FIRE EXTINGUISHERS



It is important to know about the classes of fires because fire-extinguishers are classified and marked based on the type of fire on which they would be effective. So in case of fire, you first want to know the class of fire, so that they can use the right extinguishers. If wrong extinguisher is used, the result could be fatal in certain cases. Following are different types of extinguishers:-

Water Based

These are most effective on Class A fires. On Class B fires, these are mostly ineffective. This is because, oil/petrol/gasoline etc. being lighter than water continues

to float over water, and, thus, it continues to burn. In some cases, use of water based extinguishers on Class B fires could turn out to be injurious also. That is because, as water is thrown over burning fuel, the force due to water-stream could cause burning petrol etc. to be sputtered, and, this hot fuel could cause injury, if it falls on somebody.

On Class C fires, these should never be used. Use of water based extinguishers on Class C fires would surely be fatal. That is because, water is a good conductor of electricity, and, the electric current flows through the water-jet directly into the hands of the person who is holding the water-hose, resulting in

immediate electrocution.

Foam Based

These are used mostly on Class B fires. It can also be used on Class A fires. These should never be used on Class C fires. The main constituent of foam being water – it can easily prove to be fatal on a Class C fire.

CO₂ Based

These are mostly used on Class C fires. It can also be used on Class A and Class B fires. These kind of extinguishers might also be used to extinguish fires in

computers, costly electronic equipment etc. where, usage of water etc. could cause damage to the equipment. The biggest advantage of these kinds of extinguishers is that it does not leave any residue, smell or mess.

Dry Chemical Based

These are most commonly used type of extinguishers. It can be used on Class A, B and C fire. Hence, it is also known as ABC type extinguisher. Its impact on Class D fire could be varied, depending on the type of metal being burnt.

2.6.3 PREVENTIVE AND PROTECTIVE MEASURES

Fires can spread more or less rapidly depending on their causes, the nature of the material and goods alight, the fire prevention installations (automatic sprinklers), meteorological conditions, the ways the population is informed and the initiative it shows, as well as the speed and efficiency of the intervening services and of their fire-fighting equipment. The means of intervention brought into coordinated action at the local, Tehsil or District Level vary according to the seriousness of the incident. The time

factor and the quality of the intervention are of primary importance. Fire-fighting requires that substantial means be available at the right time and place and brought into action as quickly as possible. The chances of success are greater when the fire has just broken out. Following general precautionary measures should be taken:

- Keep matches and lighters out of the reach of children and teach them caution around fires and



inflammable objects.

- Do not keep inflammable products (petrol, gas containers, paper, cloth, etc.) near any source of heat.
- Keep in mind the instructions relating to fires, find out about protection measures, know the whereabouts of gas and electricity main switches and learn to use domestic fire-fighting equipment (extinguishers, fire reels and hoses, nozzles ,etc.);
- Do not smoke, do not light fires, do not switch on electrical equipment or machinery likely to make sparks when handling, or pouring inflammable or toxic products (petrol, gas, etc.), or if they are leaking.
- Know the telephone numbers of the Rescue 1122, Civil Defense, Edhi, nearby health facility and police.

2.6.4 PREVENTION AND PRECAUTIONARY MEASURES FOR DDMAs IN CASE OF FIRE INCLUDING FOREST FIRE

- Mark and prepare Geo referred map of all potentially risk prone building and points, with special reference to fire.
- TMA should ensure that there is no encroachment on the way to potential fire prone buildings which can hinder firefighting operations.
- Ensure that all building / potential vulnerable points have escape route for residents / workers in case of fire emergency
- Ensure that fire extinguishing equipment is available and in functional condition and all security / firefighting teams know their location
- Ensure that security staff / firefighting staff is well trained and physical and medically fit to combat fire in case of emergency.
- Ensure that residents / workers of building and flash points are aware of emergency SOPs (to be followed in emergency situation) and know escape routes
- Ensure that contact number of all firefighting agencies are displayed at prominent place in building and at flash points with necessary instructions are to be followed during emergency situation.
- Operationalize Control for information of general public and for coordination among stakeholders
- Ensure that all equipment and material required to combat fire with rescue department is ready, in order, functional and firefighting team is trained and all members are physically and medically fit to combat fire.
- Ensure that health department has made all necessary arrangements (inclusive of human resources, equipment and medicines etc.) to deal with burn cases resulting from fire break out.
- Ensure that mock drills have regularly been conducted and firefighters are aware of the potential threats of fire emergency in their area (involving all stakeholders Rescue, Health, DDMA's etc.)
- DDMA should convene periodic meeting with all owners of such building periodically and inspection teams should visit all building, flash points (petrol and gasoline station) to ensure that all precautionary measures have been take and fir extinguish equipment is available (functional) and staff is trained.
- All DDMA with forest plantations in respective should also include forest department in all meetings and operations mentioned above.

2.7 HEAT WAVE

2.7.1 WHAT IS HEAT WAVE?

Heat wave is a result of phenomenon which occurs on sea and terrestrial areas, near coastal belt, jointly. Heat wave take place when low pressure develops on the ocean for long time and high pressure develops simultaneously on terrestrial areas. This phenomenon, if remains

for long time, will keep sky clear with hot days. Normally, the temperature rises and remains above normal continuously causing sustained heat wave. Heat wave rises temperature up to 5C for prolonged period, causing cut off in breeze. This high pressure and clear skies make air warmer and



stagnant over the region for many days.

Considerable deforestation and rapid urbanization had also contributed to the severity of the heat by generating Urban Heat Island Effect. Trees and vegetation lower surface and air temperatures by providing shade and through evapotranspiration. Shaded surfaces,

for example, are significantly cooler than the temperatures of un-shaded materials. In 2015 Karachi faced a severe heat wave which caused several casualties.

As a result of projected climate change, more frequent and powerful heat waves can be expected in the future.

2.7.2 PRECAUTIONARY MEASURES

In view of the above-mentioned conclusions, the situation demands a comprehensive strategy to cope with disastrous heat waves. It is recommended that an effective early warning system for heat waves as discussed above may be established in the country

on a priority basis. For this purpose a detailed survey should be conducted to locate and map the heat wave prone areas in the country with all vulnerabilities, risks and possible scenarios. Following precautionary measures should be taken:-

- Capacity of individuals and communities may be built to respond to the heat stress during heat waves by raising heat-health awareness campaigns in the province before the onset of a heat waves season.
- Orientation of school and college students of heat wave prone area on disaster due to different natural hazards and their management may be done at least once in a year.
- Tree plantation should immediately be initiated in the city on emergency basis.
- The heat island effect can be counteracted slightly by using white or reflective materials to build houses, roofs, pavements and roads, thus increasing the overall albedo of the city.
- Green roofs are another method of decreasing the urban heat island effect. Green roof is the practice of having vegetation on a roof such as having trees or a garden. The plants that are on the roof increase the albedo and decrease the urban heat island effect.
- Proper town planning rules and regulations may be observed for all on-going and in future townships.
- “Cool Centers” facilitated with drinking water, fans, air etc. maybe established at public places and along the main avenues.
- Heat/Sun Stroke is a preventable condition. Following Common preventive measures are recommended which should be taken by the health authorities:-
 1. Public should be educated through awareness messages to drink plenty of water while limiting time in different sunlight in hot/humid weather or in places with high environmental temperatures, avoid becoming dehydrated and to refrain from vigorous physical activities in hot humid weather.
 2. Public should be made aware of early signs/ symptoms of dehydration and subsequent evolving signs and symptoms of heat/sun stroke such as muscle cramps, nausea, vomiting, light-headedness and even heart palpitations.
 3. The person working under the sun should prevent dehydration and heat stroke by taking time out of such drinking plenty of water/fluids. The patients should avoid use of caffeine containing soft drinks and / or tea, which may exacerbate dehydration.

FIGURE 2.12: TIPS TO BEAT THE HEAT



2.8 RODENT CONTROL

2.8.1 RODENT INFESTATION

Rodents are small mammals of the order Rodentia, which are characterized by a single pair of unremittingly growing incisors in each of the upper and lower jaws. About forty percent of all mammal species are rodents; they are found in vast numbers on all continents except Antarctica. They are the most diversified mammalian and live in a variety of terrestrial habitats, including human-made environments. Well-known rodents include mice, rats, squirrels, porcupines.

People are very concerned about rodent control – and with good reason. Rodents consume and contaminate food with their fur, urine and feces. Rat burrowing causes streets and structures to collapse. Their constant gnawing (continuous chewing or biting) damages property. This has caused power outages, Internet disconnect, computer crashes, fires and

human deaths. It is estimated that 25 percent of all fires attributed to “unknown causes” are probably started by rodents gnawing on gas lines, electrical wiring and matches.

Rodents also carry disease. A few centuries ago, 25 million people died of “black plague” – a disease carried by rats and transmitted to humans by fleas. Today, plague still occurs, even in this country, along with other rodent-borne diseases including leptospirosis, hantavirus pulmonary syndrome, rat bite fever and food-borne diseases. Rat bites threaten human health.

Rat bite incidents are reported every year, however, the frequency of incidents has significantly increased in the recent past, especially hundreds of rat bite cases were reported in Peshawar alone as result of mushroom growth of rats in 2015-16.



2.8.2 MANAGING RODENTS

Long-term rodent control for urban areas combines sanitation, exclusion and, when necessary, the use of traps and baits

SANITATION:

Rodent control begins with sanitation. While rodents find warmth and shelter inside structures, *food* is their first reason for living in and around buildings (urban settlements). Thus, every effort should be made to eliminate rodent food sources in and around building. Foods should be kept in sealed containers made of materials difficult for rodents to chew through, such as metal and hard plastic. Trash also should be stored in tightly sealed containers including trash cans and dumpsters with lids.

Drain openings should be securely plugged. Trash removal should be regular and frequent enough to keep rodents from relying on food trashes. Water management is also important for rat control. Don't let water stand in sinks overnight. And keep lids on toilets – rodents have been known to drink water, and even urine, from toilets, and can enter structures by

swimming pipes and emerging from toilets.

EXCLUSION:

Exclusion is the best method to control rodents which refers to a state where all opening are plugged, doors are kept closed, wall are painted up to 3.5 ft. height, making it impossible for the rodent enter into any building. All holes in toilets and washrooms are covered with metallic nets (net less than .25 inch size). Exclusion is considered first line of defense.

Metal kick plates attached to doors can prevent from rodents gnawing on them. Exterior vents and floor drains should be covered with screens or metallic nets grates sufficient to exclude rodents, and spaces around drains should be filled with cement.



TRAPPING:

Traps are most useful against mice, because mice tend to be curious and rats suspicious. For mouse control in public buildings, snap traps can be used. Correct use of snap traps begins with proper placement. Along walls (rodents tend to run along walls), snap traps should be placed perpendicular to the wall, with the trigger end against the wall. Although un-baited snap traps catch rodents but they work best when baited with food attractive to rodents i.e. bait with meats, fruit or sweets. For mice, cotton balls and dental floss are also attractive as nesting materials.

BAITING:

Baiting rodents with rodenticides is another effective means of control. Often, baiting is the most efficient and timely way to eliminate large numbers of rodents. The main disadvantage is that rodenticides are toxicants and must be used carefully to avoid harming people, pets and other non-target animals. As with all pesticides, precautions (and associated risks) must be taken when using rodenticides. Rats may ignore newly-placed rodent bait and traps for days or even weeks, especially if other food continues to be routinely available to them. The curious mouse may accept bait more readily; but to be effective, many closely-spaced bait offerings must be placed due to the mouse's smaller home range.

2.9 SMOG

The year 2016 was a particularly challenging due to adverse effects of climate change being felt throughout Punjab. During early November 2016, several parts of Punjab, particularly the city of Lahore, were affected by severe smog that was hazardous to the health of the citizens. Citizens of Lahore are complaining of breathing difficulties and irritable eyes as a blanket of thick smog. Visibility plunged to less than 20 metres and citizens wore face masks to help with breathing. Low visibility caused closure of portions of Motorway at midnight, besides hampering vehicular movement on almost entire National Highway.

Excessive Pollution has made the atmosphere

suffocating even indoors, putting even housewives and children at huge risk of getting eye, skin, lungs, ear, nose and throat complications. In places near irrigation canals, rice paddies and rivers where there is more moisture available, the fog gets even thicker.

During these difficult times, the PDMA issued weather and smog alerts asking the public to take reasonable precautions against smog to protect themselves and their families. Public was asked to keep windows closed for offices and residences and even vehicles. It was also advised that the public wear masks at all times and undertake frequent eye washes to guard against the risk of infections.



CHAPTER 3

MONSOON FORECAST FOR 2017

3.1 CLIMATE CHANGE AND 2016 IN PERSPECTIVE

Global warming and certain other associated factors have made abrupt changes in the climatic pattern and their every likelihood of shifting of seasons to and fro making it possible the start of monsoon bit earlier or bit late than its normal course/schedule. Experts declared the year 2016 as the warmest year of the decade with around 15 to 20 percent more heavy rainfall

in monsoon season. As per PMD Monsoon forecast 2016, heavy rainfall coupled with high temperature leading to heavy floods was expected. Experts therefore, warned to remain alert and attain high level of preparedness.

Pakistan Meteorological Department has predicted the following seasonal forecast for June 2017.

3.2 MONSOON FORECAST 2017



National Weather Forecasting Centre
Pakistan Meteorological Department



Dated: June 08, 2017

Monthly Outlook for June 2017

Large uncertainty prevails in the global models about evolution of El Niño during monsoon season 2017. Positive phase of Indian Ocean Dipole is likely to dominate throughout the summer season. These forcing play an important role in modification of the seasonal weather in the region.

Outlook for the month of June 2017, has been prepared based upon regional and global weather conditions incorporating the climate system dynamics. Following are the highlights of weather in June 2017:

- Northern half of the country is expected to receive more precipitation than the southern half of the country.
- Three-four spells of thunderstorm-rain and isolated hailstorms associated with windstorm are predicted in Upper Punjab, AJK, KP and adjoining areas of Gilgit-Baltistan. Hot and dry conditions, with chances of dust thunderstorms, will prevail in the southern half of the country.
- Due to intense heating, temperatures in the southern half of the country are likely to remain slightly above normal.

Note: Keeping in view the rapid changes in climate system dynamics, above outlook will be updated on monthly basis during the first week of each month.

Spokesperson

CHAPTER 4

THE PROVINCIAL FLOOD CONTINGENCY PLAN 2017

This chapter contains three sections. First section deals with the role of PDMA Punjab in dealing with the flood emergencies. This section describes in detail the preparedness activities alongwith timelines, vulnerable districts, pre-flood arrangements, mock exercises and etc. Second section deals with the disaster response functions like rescue, relief and rehabilitation efforts and the third section deals with the roles and responsibilities of various stakeholders in case of any imminent flood emergency.

4.1 ROLE OF PDMA PUNJAB

4.1.1 OVERVIEW

The Provincial Disaster Management Authority was constituted under the National Disaster Management Act in 2010 and specializes in mitigation, preparedness and an organized response to a disaster. The most important role of PDMA lies in providing a platform for all provincial departments to come together and strategize management and response to disasters and calamities. PDMA also acts as the coordinating authority, which articulates the coordination mechanism between key provincial departments including Rescue 1122, Civil Defense,

District Governments, Punjab Irrigation Department and Punjab Police for immediate rescue and rehabilitation operations. In case of a disaster, PDMA not only oversees search, rescue and evacuation of the affected people, but also takes concrete measures to provide immediate relief, early recovery and long-term rehabilitation to them. In case of emergencies, PDMA works closely with District Administration to organize initial and subsequent assessment of disaster affected areas, and determine the course of action to ensure long-term rehabilitation of the affected population.

4.1.2 PDMA PUNJAB AND DISASTER MANAGEMENT

Provincial Disaster Management Authority (PDMA) Punjab is a coordinating body that provides a platform to all departments and is responsible for spearheading the Government response to a disaster.

PDMA Punjab is converting itself from responsive / reactive mode to pro-active mode for disaster management. PDMA team is committed to perform its leading role in all phases of disaster management like preparedness, mitigation, early-warnings, rescue, response, relief, recovery and rehabilitation. PDMA in its endeavor to raise the bar of preparedness is carrying out necessary tasks to shift from reactive mode to proactive mode which includes lot of work conceptualization, brainstorming, orientation of key stakeholders, information gathering, automation, integration of early warning system etc. and chalking out policies accordingly. Some of the functions of PDMA Punjab in managing disasters is as under:-

- PDMA coordinates with all stakeholders during disasters and acts as hub between district, provincial and national stakeholders in accordance with the levels of disasters.
- PDMA remains ready to provide additional rescue and relief resources to DDMA when and where demanded by DDMA i.e. Boats, OBMs, Life Jackets, Tents, Mats, Mosquito nets, Food hampers, Bailey Bridges and De-watering pumps.

Similarly helicopters of the Pak Armed forces and other government agencies will be employed when needed to carry out rescue and relief operations.

- PDMA operationalizes Command and Control Center (Control Room) at PDMA Lahore office which operates 24/7 from 15th June to 15th October during flood season and in case of other disasters as well to provide an alternate mean of communication to all DDMA's and other agencies if routine communication system collapses in any disaster.
- PDMA prepares consolidated inventory list of materials, equipment, gadgets and machinery available with all stakeholders with their location, related to disaster response and shares with all DDMA's to help channelize them where and whenever required.
- PDMA makes necessary arrangements for the provision of food, shelters, drinking water, medical supplies, and non-food items to the affected districts and areas to complement the efforts of the District Administration.
- PDMA requests NDMA or other federal and International agencies to jump in, when it is deemed necessary and provides platform to all National and International stakeholders in case of exceptional disaster.

- PDMA also helps DDMA to carry out damage assessment surveys after disaster by devising loss assessment tools, set procedures, and orientate field survey teams. It ensures that set procedures and process are properly followed in preparation

of loss assessment etc. and implements policies of rehabilitation announced by provincial / federal governments.

4.1.3 ALERTNESS LEVELS

Four levels of alertness have been established by PDMA Punjab depicted in Figure 4.1.

FIGURE 4.1: ALERTNESS LEVELS

<p>Level-D</p> <p>(Disaster threat is perceptible)</p>	<p>DDMA shall conduct monthly meetings besides at least 2 mock exercises as per DDMP, well in time, to make the concerned officers/officials understand their role and responsibility for better coordination and testing of rescue and relief equipment. DDMA shall also ensure the physical presence of concerned staff deputed and availability of equipment/resources for all designated vulnerable sites within given time frame during disaster. Vulnerable site's inspections and necessary works/action shall be carried out as mitigation measures.</p>
<p>Level-C</p> <p>(Alert)(Warning issued but likelihood of occurrence is less than 100%)</p>	<p>Activities to be undertaken in level D +</p> <p>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 6 hourly. Only DCO and DPO shall grant leave according to the situation.</p>
<p>Level-B</p> <p>(High Alert) (Disaster threat is imminent)</p>	<p>Activities to be undertaken in level B+</p> <p>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.</p>
<p>Level-B</p> <p>(High Alert) (Disaster threat is imminent)</p>	<p>Activities to be undertaken in level B+</p> <p>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.</p>

4.1.4 THE VULNERABLE DISTRICTS IN PUNJAB

Almost all districts of the province are prone to flood disaster since most of them touch river system or nullahs. Districts have been categorized into 3 groups on the basis of likelihood of occurrence and intensity of flood disaster i.e. A, B and C.

TABLE 4.1: VULNERABLE DISTRICTS IN PUNJAB

District	Risk	District	Risk	District	Risk	District	Risk
Bhakkar	A	Jhelum	A	Chiniot	B	Lodhran	C
D.G. Khan	A	RY Khan	A	Attock	B	Khushab	C
Multan	A	Rajanpur	A	Bahawalnagar	B	Okara	C
Mianwali	A	Gujranwala	A	Khanewal	B	Rawalpindi	C
Muzaffargarh	A	Lahore	B	Sheikhupura	B	Sargodha	C
Layyah	A	Gujrat	B	Sahiwal	B	TT Singh	C
Jhang	A	Sialkot	B	Faisalabad	C	Vehari	C
MB Din	A	Hafizabad	B	Chakwal	C	Pakpattan	C
Narowal	A	Nankana	B	Kasur	C	Bahawalpur	C
High Risk	A	Medium Risk	B	Low Risk	C		

4.1.5 ACTIVITY TIME FRAME FOR 2017

Following activity time frame has been charted out by PDMA Punjab for 2017:-

TABLE 4.2: ACTIVITY TIME FRAME 2017

Sr. No.	Activities	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1	District & Dept. contingency Plan		DDMAs & Prov. Depts.										
2	Provincial Contingency Plan				PDMA								
3	District Mock Exercises				DDMAs & Dept								
4	Helpline 1129	PDMA											
5	Media Cell						PDMA						
6	Pre-positioning of Stock			PDMA & DDMA									
7	Provincial Cab Com Meeting	PDMA											
8	Control Room Operations						DDMAs & PDMA						
10	Met Weather Updates						PDMA						
11	DDMA Meeting Monthly	DDMAs											
12	Mitigation/ Preparedness	All Govt. Line Departments											

4.1.6 MEETINGS AND COORDINATION MECHANISM

Government of Punjab gives high priority to the protection of lives, livelihood and properties of people, hence disaster management remains on top of government's priority agenda points. Chief Minister Punjab has constituted a **Cabinet Committee on floods** to look after the matters of disaster management. Cabinet Committee is chaired by Mr. Nadeem Kamran, Minister for Planning and

Development Punjab. Cabinet Committee members led by senior ministers and provincial secretaries pay visit to flood prone districts and hold consultation meeting for pre flood preparations. Cabinet Committee also holds meetings with stakeholders and monitors implementation of Cabinet Committee decision at district level. So far in 2017, Cabinet Committee has convened seven high level meetings.

- 1st Cabinet Committee Meeting (06.04.2017)
- 2nd Cabinet Committee Meeting (07.04.2017)
- 3rd Cabinet Committee Meeting (13.04.2017)
- 4th Cabinet Committee Meeting (19.04.2017)
- 5th Cabinet Committee Meeting (27.04.2017)
- 6th Cabinet Committee Meeting (09.05.2017)
- CS Meeting on Flood Control & Management (16.05.2017)
- 7th Cabinet Committee Meeting (01.06.2017)

4.1.7 PRE-FLOOD ARRANGEMENTS

- All departments and district administrations have prepared & submitted their respective contingency plans outlining details of human resources their roles and responsibilities, machinery, equipment, gadgets, with their location and condition.
- All DDMA's have conducted Mock Exercises in first week of May 2017 and mock exercises will be conducted in 1st week of June 2017.
- Necessary guidelines have been provided to all DDMA's and their members regarding Camp Management, Disaster Risk Reduction.
- Districts have been registered, scrutinized and short listed for the supply of food and non-food item during emergency situation. PDMA's management has taken procurement process from emergency mode to normal mode which will save resources and ensure timely supply of needed items.
- All departments to ensure sufficient stock of materials and machinery at vulnerable points.
- Communication & Works department has prepared Communication Contingency Plan to keep road / bridge links functional in flood season as per SOPs and have identified alternate routes in case main routes get disconnected.
- DDMA's in consultation with Food Department have identified sites for safe storage of food stocks and a

put mechanism in place to shift this stock to desired points when and where needed.

- Both Health and Livestock departments have ensured that they will provide medicines & vaccines in flood prone areas / camps according to the severity of the disaster.
- Regular coordination meetings of Pak Army, NDMA, PDMA and Rescue 1122 teams are being held for

better and well synchronised response to disasters.

- Finance Department has been sensitised and Chief Minister of Punjab has passed special instructions to meet stakeholders' demand of funds and Finance Department has ensured that department will keep adequate budgetary allocation for disaster management and preparedness in the Budget.

FIGURE 4.2: MOCK EXERCISE (2017) IN CHINIOT, SAHIWAL, LAYYAH, MIANWALI & RAWALPINDI





4.1.8 RISK REDUCTION EFFORTS

- PDMA, through all concerned departments, is keeping an eye on risk prone areas and have passed on instructions to complete repair and maintenance work before the onset of rainy season.
- Mock exercise have been completed and reported by all DDMA (carried out in first week of May 2017).
- All DDMA's have certified that disaster response (flood) related machinery has been tested and found in proper order and functional and available.
- Stakeholder have been requested to remove encroachment, hurdles and complete de-siltation process, on priority to keep water flow within rivers' / nullahs basin to lessen the damages it can cause otherwise.
- Regular data regarding inflow and outflow of dams is being obtained from the concerned authorities being shared with all DDMA's and other concerned departments.
- Weather patterns are being regularly monitored and data accumulated.

4.1.9 PDMA CONTROL ROOM

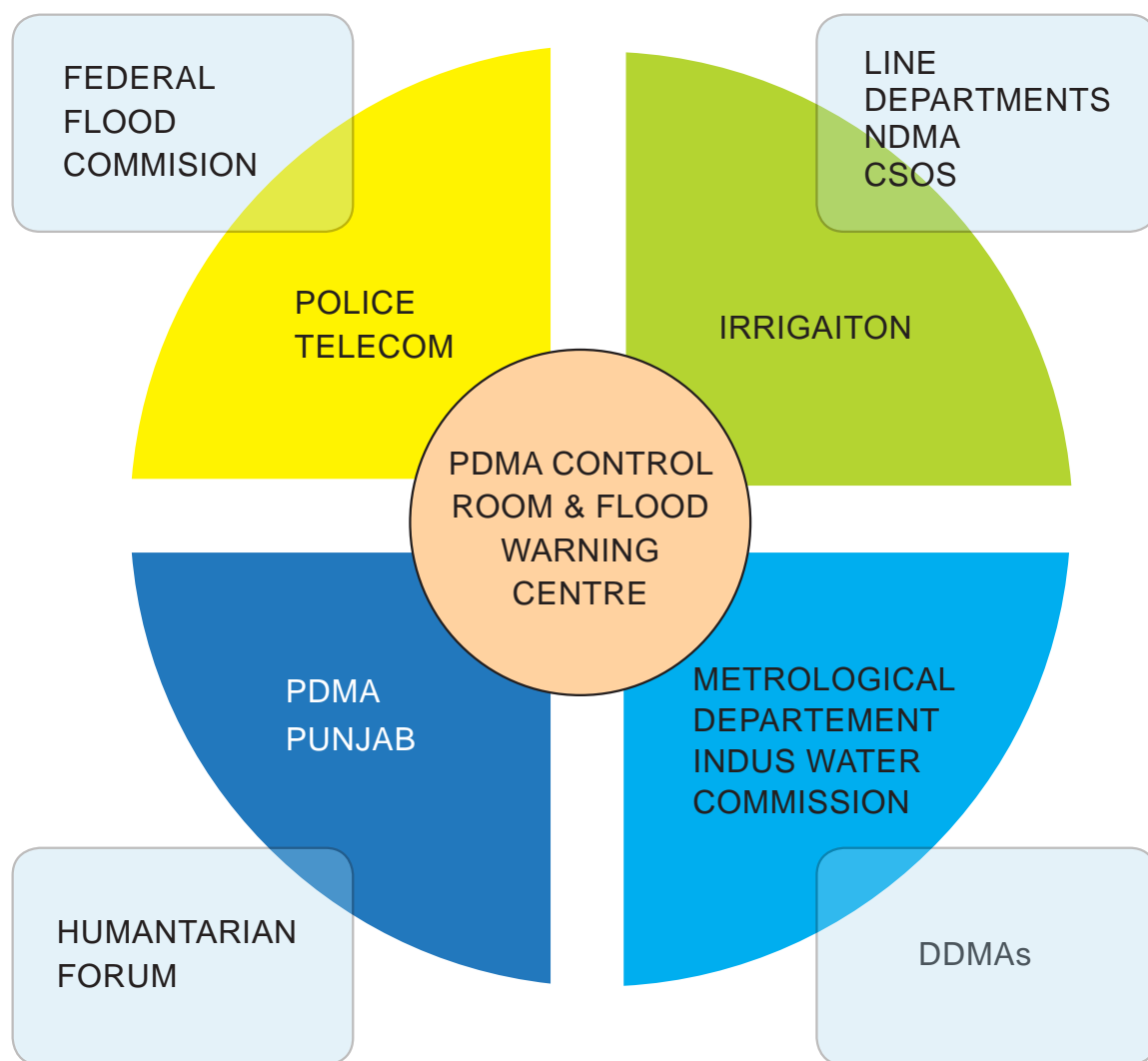
Something good which has been practiced since, is the operationalization of Control Room at 40 Lawrence Road Lahore (Head Office PDMA Punjab) and Flood Warning Center at 46 Jail Road Lahore (MET office Lahore). It starts functioning from June, 15 and remains operational till October, 15. All stakeholders' representative sit together under one roof and closely monitor river discharges and keep an eye on changing weather and issue alert on daily basis in normal conditions and keep stakeholder updated and informed through short messaging service (sms). Frequency increases with any abnormal / unusual development in weather or river gauge / discharge. Representatives of PDMA Punjab, Irrigation department, C&W department, Punjab Police, Rescue 1122, Metrological department, WAPDA, Pakistan Army,

Airforce, SUPARCO and etc. remain there round the clock. All sorts of communication facilities are provided there such as wireless, phone, fax, e-mail, internet, television etc. The basic function of PDMA Control Room is to gather information from all concerned departments and pass it on to the concerned districts or regions in an effort to forewarn them and to reduce loss of life and property. The early warning always helps in planning proper evacuations and recues. PDMA in participation with PTA and PITB broadcasted SMS to residents of flood prone area in the past, informing them about the intensity of flood with timeframe, requesting them to evacuate within given time. This activity is also planned in 2017. Following officers of PDMA Punjab will be responsible for effective coordination throughout the flood season.

TABLE 4.3: PDMA CONTROL ROOM OFFICERS

Sr. No.	NAME	DESIGNATION AND CONTACT DETAIL	STATUS
1.	Mr. Muhammad Sajjad	Director Operations PDMA 042-99203163, 0300-4441170 e-mail: sajjad1658@gmail.com	In charge
2.	Mr. Zafar Haider Shamsi	Assistant Director Admin, PDMA 042-36375526, 0307-4444785	Liaison Officer
3.	Mr. Muzammil Bashir	Procurement Officer, PDMA, 042-36375527, 0333-6032588	Logistic Officer

FIGURE 4.3: CONTROL ROOM PDMA & FLOOD WARNING CENTER



Working of PDMA Control Room and Flood Warning Center is depicted below where in whenever any information is received regarding any disaster or flood like situation it is immediately transmitted to the quarters concerned. In this way the disaster or flood management mechanism is activated.

FIGURE 4.4: FLOOD MANAGEMENT MECHANISM OF PDMA PUNJAB

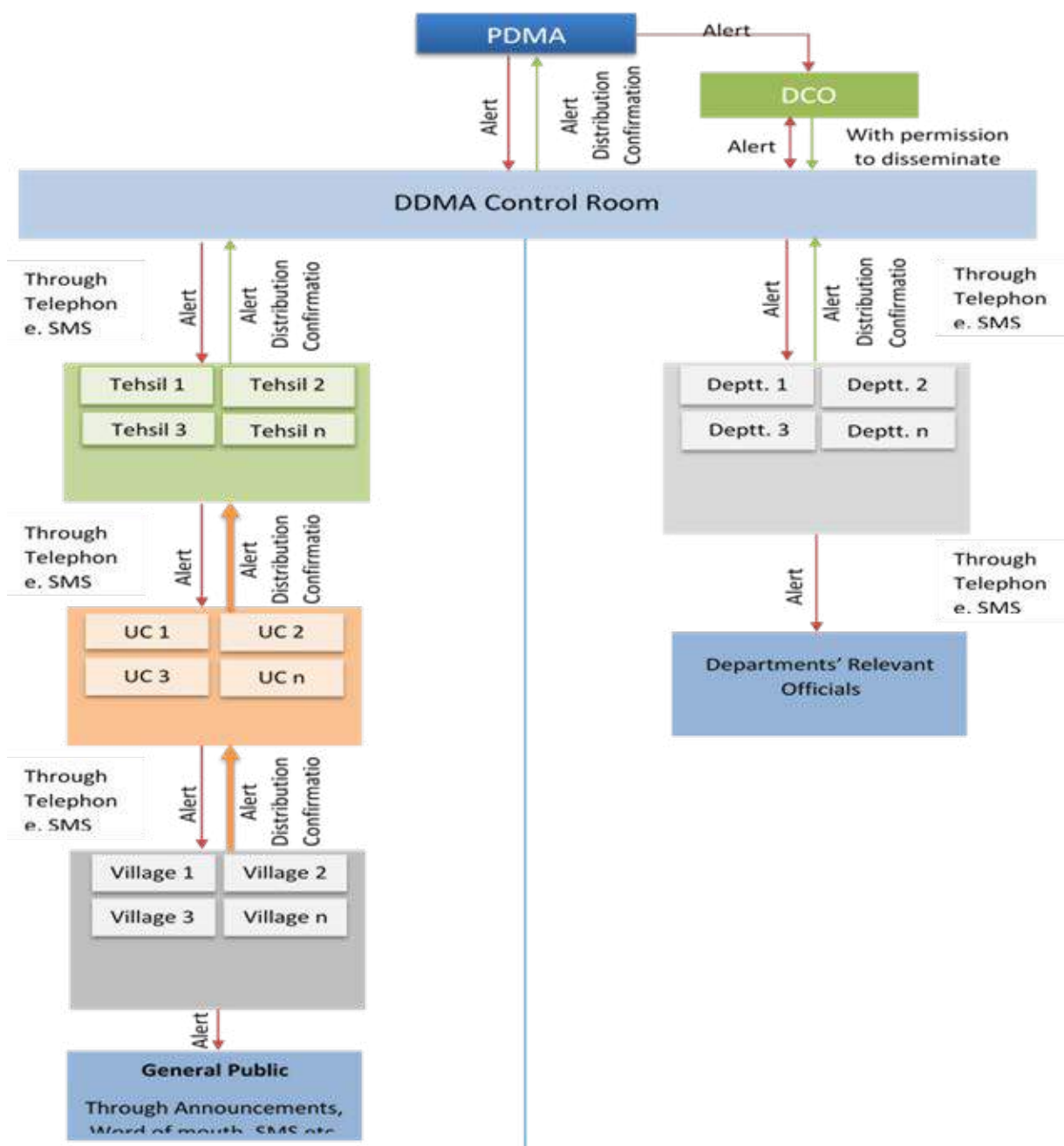


FIGURE 4.5: THE PDMA CONTROL ROOM



4.1.10 MEDIA WATCH AND PUBLIC AWARENESS

Disasters destroy communication routine channels and telephone networks, making rescue and relief operation further difficult for disaster management authorities. It becomes quite difficult to reach of endangered / stranded people after the collapse of cellular network. In such difficult situation, media become much more important. Media can help authorities to convey their life saving instructions and messages to disaster hit people. Keeping importance of media in emergency situations in view, PDMA establishes permanent cell for interaction with Media teams and keep media update. Simultaneously PDMA Punjab uses media to communicate safety instructions, Relief Camp locations to general public and affectees. Information department deploy deputy director level officer to remain in PDMA's Control Room throughout the disaster event. This cell not only issues warnings through both the print and electronic media but also collaborates with all media houses and issues certain guidelines and instructions for victims of disaster sharing information regarding various rescue and relief operations.

Parallel to early warning PDMA is keeping 1129 helpline operative in collaboration with Punjab Information Technology Board (PITB) on 24/7 mode to help people of flood prone areas. This helpline is a source of information for the vulnerable communities regarding flood situations or any other disaster and timely evacuation in worst case scenarios. Apart from early warning and intimation the helpline also receives SOS calls and these SOS calls are diverted to respective districts to respond to requests of the callers on emergency basis. Helpline operators remain in contact with the callers and keep them updated.

PDMA shares all weather updates with the helpline team on daily basis which in turn respond to the questions of the callers. Before the onset of monsoon season PDMA may conduct orientation sessions with the helpline operators if the need arises. PDMA helpline is good tool to review the performance of field formations, and the efficiency and effectiveness of rescue, relief and rehabilitation program through the public feedback. Any complaint if lodged is also catered for as per set policies and codal formalities.

FIGURE 4.6: PDMA HELPLINE 1129



FIGURE4.7: PDMA PUBLIC AWARENESS CAMPAIGNS



The poster features a large image of a man in a suit and tie, with the Pakistani flag in the background. The title is in Urdu: "بارش میں احتیاط... ہم سب کی ذمہ داری" (Precaution in Rain... Our Responsibility). Below the title is a green banner with the text "موسم برسات کیلئے ضروری احتیاطی اقدامات" (Essential Precautionary Measures for Rainy Season). The poster lists 12 safety measures in Urdu, each preceded by a red checkmark. On the right side, there are five small images showing various safety scenarios: a person on a bicycle, a person walking, a person carrying a child, a person walking in the rain, and a person walking in the rain. At the bottom, there is a red banner with the text "کسی بھی قسم کی ہنگامی صورتحال میں متعلقہ ڈی سی او آفس / ای ایم او آفس / واسایا پی ڈی ایم اے کی ہیلپ لائن 1129 پر اطلاع کریں۔" (In any emergency situation, inform the concerned DSO / EMO / WASA / PDMA Helpline 1129). The PDMA logo is at the bottom right.

بارش میں احتیاط... ہم سب کی ذمہ داری

موسم برسات کیلئے ضروری احتیاطی اقدامات

- ✓ رہائشی عمارتوں کی چھتوں کی صفائی، مرمت اور نکاسی آب کو یقینی بنائیں۔
- ✓ برساتی تالوں اور سیوریج سسٹم کے اندر کودا کرکٹ پھینکنے سے اجتناب کریں۔
- ✓ جانوروں کو حفاظتی بندھ جات لگوائیں اور ان کے چارہ کو خشک مقامات پر رکھیں۔
- ✓ تیز آمدنی اور بارش میں بجلی کے کھمبے سائمن بورڈز اور درختوں سے دور رہیں۔
- ✓ دریاؤں اور برساتی تالوں میں نہانے اور گزرنے سے پرہیز کریں۔
- ✓ پوسیدہ اور کچے مکانات کے رہائشی شدید بارش کی صورت میں محفوظ مقامات پر منتقل ہو جائیں۔
- ✓ بچے، بوڑھے، عواتین اور معذور افراد پر ہنگامی صورتحال میں خصوصی توجہ دیں۔
- ✓ زبردستی عمارات میں داخل ہونے یا رہائش اختیار کرنے سے اجتناب کریں۔
- ✓ ٹھیکسی ملاقوں کے کیمپن اپنے گھروں کے تہ خانہ جات اور پختی منزلوں کا اہم وقتی سامان محفوظ اور
- ✓ بجلی کے آلات کو پانی سے دور رکھیں اور زمین پر گری ہوئی تاروں کو چھونے سے اجتناب کریں۔
- ✓ بلند مقامات پر منتقل کر لیں۔

[کسی بھی قسم کی ہنگامی صورتحال میں متعلقہ ڈی سی او آفس / ای ایم او آفس / واسایا پی ڈی ایم اے کی ہیلپ لائن 1129 پر اطلاع کریں۔]

PDMA

پنجاب کی حکومت

4.1.11 PDMA WAREHOUSES

United Nations World Food Program (WFP) in collaboration with PDMA and the government of Punjab established state of the art warehouses at Muzaffargarh and Lahore. These warehouses are termed as “Humanitarian Response Facility” (HRF) and have a total storage capacity of around 3,000 MT and are established with a cost of 3.0 million dollars.

These HRFs have enabled PDMA to store relief items for two different regions of Punjab. These storage facilities effectively have reduced the time lag for supplies to southern Punjab. Apart from the above warehouse WFP also established *flospans* (small warehouses) in 11 vulnerable districts of Punjab with the storage capacity of 300-500 MT (each).

FIGURE 4.8: HRF JALLO, LAHORE

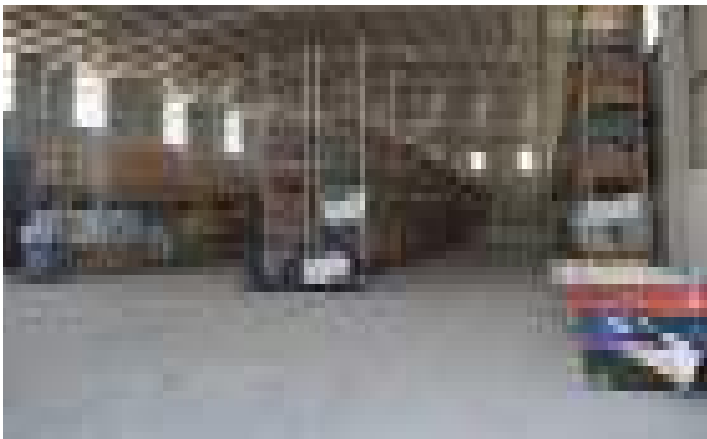


TABLE 4.4: FLOSPANS

S.No.	District
1.	Muzaffargarh
2.	DG Khan
3.	Layyah
4.	Rajanpur
5.	Mianwali
6.	Bhakkar

S.No.	District
7.	Gujrat
8.	Sialkot
9.	R Y Khan
10.	Bahawalpur
11.	Rawalpindi

4.1.12 CAPACITY BUILDING AND ESTABLISHMENT OF DDMA OFFICES

Damage caused by any disaster can significantly be reduced if certain measures are taken in advance and planning is done on the basis of ground situations and level of preparedness of concerned department. Although we can't stop the occurrence of the disaster nevertheless we can minimize the damage it can cause by adopting proactive approach and better planning. Early planning is very essential and beneficial in determining the true potential of the disaster threat. PDMA in collaboration with the World Bank and Asian Development Bank is executing two projects; Flood

Emergency Reconstruction & Resilience Project (FERRP) and Disaster & Climate Resilience Improvement Project (DCRIP). Moreover, for a proactive and resilient approach, MIS, robust EWS, supply chain management, gap analysis and capacity building of PDMA and DDMA are also the prime targets for disaster risk mitigation project. Preliminary Multiple Hazard Vulnerability Risk Assessment (MHVRA) has been initiated in five districts and twenty vulnerable districts will be covered. Moreover, DDMA offices will be established in following twenty vulnerable districts in 2017.

TABLE 4.5: ESTABLISHMENT OF DDMA OFFICES IN 2017

Sr. No	District	Sr. No	District	Sr. No	District	Sr. No	District
1.	Sialkot	6.	Mazaffargarh	11.	Khushab	16.	Jhelum
2.	Narowal	7.	Rajanpur	12.	Bhakkar	17.	Multan
3.	Hafizabad	8.	Layyah	13.	Mianwali	18.	Gujranwala
4.	Gujrat	9.	MB Din	14.	Jhang	19.	RY Khan
5.	DG Khan	10.	Chiniot	15.	Rawalpindi	20.	Kasur

4.2 DISASTER RESPONSE FUNCTIONS

4.2.1 RESCUE AND EVACUATION

In case of Disaster, the DRF (PDMA Punjab and Rescue 1122) and District Administration act as First Responders. PDMA and allied stakeholders have changed their approach and shifted from reactive to proactive mode and this approach has proved very useful. Early warning system and evacuation has proved very fruitful, less resources are needed as compared to rescue efforts. PDMA in collaboration with stakeholders have succeeded in gaining trust and confidence of the people of flood affected areas. PDMA relies more on early warning and recommends DDMA to evacuate risk prone area within given timeframe. Sometimes services of police are also required to get area evacuated. However, it has also been observed that few people remain with their livestock at livestock shed which are constructed on elevated plinth and remain safe. Timely evacuation significantly lessens burden of rescue efforts. Nevertheless, rescue operations continue until water recedes and come down its normal level. Once a disaster or calamity strikes any place or region then the three R (Rescue, Relief and Rehabilitation), come into play. The first step or response is that of rescue but if proper information is available and the threatened area is identified then the people at risk can be safely

evacuated as well. Hence for practical purposes the evacuation precedes the rescue as a response to any disaster.

DDMAs normally take services of revenue department to carry out evacuation activities; however, this decision rests with the DDMA to decide which department is to be assigned this duty. It may vary from district to district.

Evacuations would be coordinated and ordered by the Deputy Commissioner considering the on-ground scenario. Forced evacuation can also be ordered by the Deputy Commissioner depending upon the magnitude of the disaster. People may also be warned to evacuate through sirens, drum beatings, radio, cable TV or other local means i.e. Mosque announcement. PDMA is working on an innovative idea of voice messaging to risk prone areas for early warnings and evacuations from the endangered areas.

If the disaster is of exceptionally high level and DDMA feels that it would be possible to handle by them with available means they can invite Pakistan Army which acts as Reserve Responders.

4.2.2 RELIEF EFFORTS – CAMP MANAGEMENT SYSTEM

Normally communities living near riverine belts have two houses, one at farm near river and the second in their villages. Magnitude of the disaster determines whether one shelter is hit or both get affected. In the earlier scenario they go back to their village. However, if their shelter / houses are inundated then they are displaced and they rely on governments for shelter as well food. PDMA has issued instructions to DDMAs of flood prone districts for identification of suitable sites for camp establishment in case of floods, that should be high raised, elevated and close to affected areas where required facilities either available or easy to arrange. It has also been observed in the last several floods that people of Punjab prefer to stay with their relative

instead of staying in camps. In low level flood situation, displaced people are kept in nearby public building i.e. school or hospital etc. And when number of displaced becomes significant then camp village is established. The locations of these relief camps have been duly indicated in the flood contingency plans prepared by the District Administrations and more or less are at the same location as per previous floods. These camp sites would be equipped with proper medical, water and sanitation facilities by the District Administrations. Transport vehicles for the evacuation of victims would be arranged from government and private sources. Staff of Punjab Emergency Services will carry out timely and effective operations to locate and rescue persons and take them to safe places.

A part from food shelter and clean drinking water, another important requirement is sanitation. PDMA has issued instructions to all DDMA's to construct separate toilets and bathing facilities for men and women and to meet standards that are followed while setting up washrooms and toilets in emergency situation, as fecal material can easily spread epidemics if not properly disposed of. District Administration and /or WASA authorities should actively be involved in properly cleaning the facility on daily basis. Mosquitoes too are a constant menace in such open environment especially during flood disasters hence regular anti mosquito sprays must be ensured. It must be ensured that all segments of society are properly taken care off during emergency situation and in camps. Special arrangement should be made for highly vulnerable group in camps / temporary shelters. Special care should be given to highly vulnerable groups i.e. elders, children, pregnant women and disabled person. The elderly and disabled must be provided with comfortable and easily accessible areas of the public facilities designated as temporary shelters. The temporary shelters should never be overcrowded as it can create unhygienic conditions.

The medical center at these shelters should be stocked with the basic medicine such as anti-rabies, anti-venom, anti-malarial medicine, and other antibiotics etc.

Apart from organized camp sites established by the Government or humanitarian organizations there can also be numerous scattered settlements in the immediate vicinity of affected villages. The scale of these settlements is variable but these people are equally entitled to relief that the Government disburses and they should be catered for. It has been observed during last few disaster relief operations that affectees prefer to stay with their relatives instead of staying in shelter established by DDMA's or any other humanitarian agency. They become burden on the host who are themselves affected to some extent. It is therefore recommended that such affectees may also

be considered for ration and other relief goods.

There are various international standards that need to be fulfilled and followed while setting up or establishing shelters. However the reality is that the field conditions are not always conducive and field officers / officials are not always well trained or equipped to meet those standards. So conditions do vary from camp to camp, but generally certain basic minimum standards have to be met at all these shelters. Desired standards are;

- Camps would be established in areas accessible by metal roads so that it becomes easy for management to provide essential facilities in camp.
- Basic facilities such as food, clean drinking water, health, hygiene and sanitation would be available at these shelters.
- Proper registration mechanism should be in place to differentiate between those actually affected and cunning opportunists
- Proper security system should be in place in coordination with the local police as the presence of police always acts as deterrence for criminals who may be attracted to such places.
- Emergency medical care should be available as well as a proper firefighting system as fire out breaks are common in such tents.
- Proper camp management should be announced and notified and there should be a complaint cell as well.
- A proper distribution mechanism should be in place to ensure that all needy get what they deserve. White collar people feel shy of appearing in public to receive ration or other relief goods hence management should keep an eye on this and should ensure they also get relief good as per their need.
- Scattered camps need additional resources to

manage them separately hence affectees should be convinced to shift to nearby main camp for the ease of management and better look after of displaced people.

- At times shallow hand pumps are not safe for drinking as underground water gets contaminated, hence supply of clean drinking water should be ensured. Moreover, water purifying pills should be distributed if medicated clean water provision is not being provided.
- Vector control is an essential part of the camp management and steps should be taken to eradicate rats, snakes and mosquitoes etc.

- Un-accompanied children should be placed separately with proper care and fulfillment of their physical and psycho-social needs. Missing persons / children should be reported immediately to DPO, DC and PDMA.

- Needs of women as per local and cultural environment shall be considered for establishing separate relief camps for ladies with provision of proper security, light arrangements. Moreover, their medical needs should also be kept in mind and be arranged with some female member of the Camp Management.

TABLE 4.6: SOPs FOR CAMP MANAGEMENT

Land	3.0-4.5 square meter per person
Shelter	3.5 square meter per person
Water	15-20 liters per person per day
Food	2100kcal per person per day
T oilet	One per family of 6-10 persons
Health Centre	One per 20,000 persons
Child Friendly Spaces	2-4 year olds- 15 children:2 facilitators 5-9 year olds-20 children : 2 facilitators 10-18 year olds- 30 children :2 facilitators
Hospital	One for as many as 200,000 persons

FIGURE 4.9: CAMP MANAGEMENT



4.2.3 PROVISION OF MEDICAL SERVICES

Disasters disturb almost all segments of the society and compel them to dislocate and get together in Camps. Different people of different background with varying immunity levels get together in camps and remain there for unpredicted time. On one hand all displaced people are under stress due to disaster, above that close interaction and contact with communicable diseases' patients, make highly vulnerable group susceptible to those diseases. Moreover floods, and to some extent other disaster too, provide conducive environment to vector born disaster as water stays in ditched and den after flood water recedes. Hence it become important to offer medical facilities at camp during emergencies and at site after water recedes.

The main purpose of providing health services in disaster situations is to prevent, reduce and to control the spread of infectious and contagious diseases after a disaster. Major diseases that are observed in these circumstances are gastroenteritis, diarrhea, scabies, rash, malaria and snake bites etc. Therefore all relief camps shall have a medical center. Mobile clinics would also be immediately setup in the affected areas. These clinics should be fully equipped to cater for the medical needs of the affected

people. The District Health Departments will spearhead the relief effort in coordination with Provincial department and PDMA. The assistance of NGOs and International NGOs may be solicited as per the government policy. Proper maintenance of records of all patients should be ensured to be able to identify any epidemic outbreaks or for any other assessment.

Orphans, destitute women and other vulnerable elements of the affected population are the responsibility of the social welfare department. Their teams should be available in the affected areas registering such persons and shifting them to proper places separately, setting up special camps for them. There would be an ongoing systematic collection, collation, analysis and interpretation of patient data.

A Disease Early Warning System would 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. The 3C must assess the functional status and capacity of local, public and private health institutions/ organizations in the vicinity of the disaster affected area.

4.2.4 REHABILITATION

Disasters cause manifold damages to the resident of areas which are hit by any disaster, on one hand they destroy their shelters and on the other hand they affect their properties and livelihoods too. In case of floods, crops and livestock which are main sources of their income also get affected. Government of Punjab seems to become permanent partner with disaster affectees, in rehabilitation process by offering financial assistance programs for disaster affected people since 2010. Punjab has faced floods every year since then and Government has launched Emergency Cash Transfer Program every year. Watan Card, Citizens' Damage Compensation Program, Khadim e Ala Relief Card, Khadim e Punjab Imdadi Package are main Emergency Cash Transfer Programs offered launched by Government of Punjab for Flood affected people of 2010, 2012 and 2014 Floods.

Apart from cash, affected persons may also be provided with transport, if they have been relocated away from their villages. Similarly basic amenities that were given to them in the camps such as tents, utensils, beddings clothes, beddings medicine NFIs etc. may be carried by them back to their places. These items specially the tents are very useful for shelter during the rebuilding of houses.

Rehabilitation is largely dependent on the restoration of basic communication networks and infrastructures including roads and bridges. Without the proper access, people are generally reluctant to return to their home places. Also roads and bridges make repatriation easier for stakeholders. Therefore the provincial government through its departments such as Communication & Works and Irrigation should, on top priority, reopen and where

needed rebuild the basic road and bridge structures so that the basic communication and road networks become operational. This is absolutely essential for the rehabilitation process.

Similarly other departments have to restore their basic facilities, where buildings have been damaged they should be repaired and reopened. Schools and hospitals etc. are basic facilities that have to be reopened for the public in order to facilitate rehabilitation and repatriation of the affected population. Electric Power supply is very critical and essential for rehabilitation. WAPDA authorities should, on top priority, 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 would maintain law and order during and after the emergency, and provide security to the people affected by disaster. Appropriate measures would 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.

4.3 ROLES & RESPONSIBILITIES OF DEPARTMENTS

4.3.1 NATIONAL DISASTER MANAGEMENT AUTHORITY (NDMA)

National Disaster Management Authority oversees the establishment of early warning system and prepares national contingency and post disaster plans.

ROLES AND RESPONSIBILITIES

- NDMA is the prime national agency for disaster management and provides broad based guidelines and supports (technical & material) in case of 3rd level disaster hits any area.
- NDMA sets up a National Emergency Operation Centre (NEOC) and maintains a state of readiness with all equipments in working order.
- NDMA coordinates with Non-governmental, UN organizations, international NGOs and donor partners regarding availability of resources and information sharing.
- NDMA also ensures the safety and security of members and representatives of the I/NGOs and other UN agencies that are working in the field during any disaster situation.
- At the onset of a disaster, NDMA activates the National Emergency Operation Centre which organizes initial assessment of disaster and coordinates all concerned departments to respond with the right amount of resources.
- NDMA also closely monitors the disaster situation and gathers information from all district administrations and provincial PDMA's and governments as per its mandate provided in NDM Act 2010.
- NDMA also actively involves in the provision of support and relief material to all parts of the country and coordinate with them in disaster situations.
- NDMA also coordinates with the federal ministries and agencies regarding any disaster.
- The world has become a global village and in today's community of nations Pakistan also supports other nations which are affected by disasters. NDMA is also responsible for arranging and providing international aid and help.

4.3.2 DISTRICT DISASTER MANAGEMENT AUTHORITIES (DDMAs)

ROLES AND RESPONSIBILITIES

- DDMAAs are created under Section 18 of the NDM Act 2010 which defines their composition and also outlines their functions, duties and powers.
- District Disaster Management Authorities are the first line of defense and the implementing arm of the government policy and plans. Within the district there are three to four key players/departments that have to put up a joint and coordinated effort in order to fight with and handle any disaster under the leadership and coordination of the Deputy Commissioner. The office of the DC fully supported by the DPO and line departments such sets of responsibilities followed by the role of provincial departments (Contact details of Deputy Commissioners and ADCs are attached at Annexure-II and of Rescue 1122 at Annexure-III).
- All district administrations had prepared a detailed contingency plan to face any disaster or hazard specially floods which until recently have become an annual affair for some districts.
- The district administration will divide the area as per district division with the Assistant Commissioner as in charge of his / her tehsil. All disaster related activities in a said tehsil will be coordinated through the concerned AC and the District Administrations.
- On receipt of a flood warning, immediate warning will be conveyed to all the concerned officers. Immediate action will be taken in each sector / sub sector for evacuation of the population from risk prone areas to safer places or to Relief Camps. An Assistant Commissioner will ensure that announcements are made through loudspeakers of the mosques utilizing the services of the Revenue department. Headmasters of the Schools, Imam Masjid and councilors to make announcements etc.
- The tactical operations would be headed by the ADC designated by the Deputy Commissioner. The ADC would be responsible for coordinating and supervising the disaster control and relief measures in the district.
- District Administration must establish a Disaster / Flood control room at the DC's office, the numbers of which will be circulated to all concerned. The Disaster / Flood Control Room has to maintain updated information regarding the threat of disaster and statistics post disaster. The center will maintain a regular communication with the Flood Forecasting Division or the dam authorities up stream in case of a flood.
- The District Administration would immediately mobilize the equipment needed to tackle the challenges created by a disaster. The District Administration will provide a comprehensive list of flood fighting equipment to PDMA as part of their flood contingency plans.
- CEO, District Health Authority will ensure the availability of adequate medicines for treatment of common issues, particularly for snake and dog bite cases and general vaccines at each relief camp.
- District Regional Transport Authorities (DRTAs) in all 36 districts of Punjab are managed by Secretaries who would coordinate with local transporters to arrange for arranging transport required for evacuation of people from affected areas. In case of shortfall in transport in a particular district, the adjoining district would mobilize the transporters in his district to assist with the evacuation of people.
- All districts are required to prepare a District Disaster Management Plan as per a uniform template devised by PDMA Punjab. This DDMP would help all offices and districts to cope with any disaster or emergency. DDMP template is attached at Annexure-I.
- PDMA requests all District Administrations to implement the following as a corollary to the Pre-

Flood arrangements:-

- Monthly DDMA Meetings
- Inspection of flood protection bunds etc. with concerned departments
- TPV of all flood fighting equipment
- Rationalized demand of flood fighting equipment (Details of District Stocks are at Annexure-V)
- Survey and action on dangerous buildings
- Full dress Mock exercises
- Removal of encroachments in coordination with Irrigation Department, Home Department and Punjab Police
- Pre-qualification of vendors for Food items and local transport

4.3.3 IRRIGATION DEPARTMENT

Punjab's Irrigation infrastructure consists of 14 Head works and Barrages that generate 21 different main canals. These canals along with their branches cover almost 4000 miles to deliver water to more than 2000 distributaries and minor canals. This vast network of water channels irrigate 20 million acres of land in the Province. As such the role of the Provincial Irrigation Department (PID) Punjab is critical during floods and the monsoon seasons.

ROLES AND RESPONSIBILITIES

- Irrigation department should therefore ensure that the following actions are taken well before the onset of the monsoon season.
- 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 the PDMA and other districts about such discharges. This information is very critical regarding discharges from spill ways of the two major dams.
- Protection of barrages, settlements, canals, bunds, spurs and communication infrastructure such as railways, highways etc. have to be ensured. Vulnerable embankments have to properly protected and strengthened throughout the Province. The embankments stretch for more than 3,300 kilometers.
- All the six different zones, headed by a zonal chief should prepare a flood fighting plan and submit it to the Chief Engineer, Drainage and Floods for review.
- The Chief Engineer should review the zonal plans and prepare a comprehensive contingency plan for the entire department.
- Chief Engineer (Drainage and Floods) through the Executive Engineers (XENs) should ensure inspection of flood works to identify damages to embankments or the encroachments blocking passage of water in various channels.
- Irrigation department has to work in coordination with other civil authorities to take care of the encroachments on embankments and spurs.
- The department must also maintain a state of readiness and ensure the availability of stones and other flood fighting materials in proper stocks prior to the monsoon season.
- The flood warning and control room should be established in coordination with the allied departments.
- 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. These breaching sections are vast land areas. A threatening increase in water levels can be managed by diverting excess water into the breaching sections.

TABLE 4.7: LENGTH OF VARIOUS RIVERS OF PUNJAB

RIVER	LENGTH OF RIVER (K.M.)	LENGTH OF BUNDS	SPURS / STUDS (NO.)
INDUS	547	811	131
JHELUM	363	155	43
CHENAB	731	1330	309
RAVI	694	630	127
SUTLEJ	515	406	30
TOTAL	2850	3332	640

FIGURE 4.8: FLOOD BUND CATEGORIES

INFORMATION REGARDING FLOOD BUND CATEGORY A			
SR.NO	NAME OF DIVISION	NAME OF EMBANKMENT / BUND	LENGTH (ft.)
SARGODHA ZONE			
1	Rasul Head works Division	Right Guide Bund	2,121
2	-do-	Left Guide Bund	3,360
3	-do-	Right Guide Spur	2,762
4	-do-	Left Marginal Bund	17,170
	Total in feet.		25,413
	Total in Miles.		4.81
PMO BARRAGES			
1	Kalabagh H/Works Division	Jinnah Barrage	25,080
	Total in feet.		25,080
	Total in Miles.		4.75
FAISALABAD DIVISION			
1	Khanki Division	Left Marginal Bund	21,000
2	-do-	Right Marginal Bund	29,000
3	Jhang Division	Jhang Flood Protection Bund	43,875
4	Qadirabad Barrage Division	Left Marginal Bund	20,000
5	-do-	Right Marginal Bund	20,000
	Total in feet.		133,875
	Total in Miles.		25.36
BAHAWALPUR ZONE			
1	Punjnad Head works Division	Right Marginal Bund	15,000
2	-do-	Left Marginal Bund	15,000
3	-do-	Colony Protection Bund	15,000
4	Khanpur Canal Division	Minchin Flood Bund	10,000
	Total in feet.		55,000
	Total in Miles.		10.42
MULTAN ZONE			
1	Trimmu Division	Right Marginal Bund	20,000
2	-do-	Left Marginal Bund	20,000
3	Sulemanki Division	Left Marginal Bund	10,000
4	-do-	Right Marginal Bund	10,000
5	Shuja Canal Division	Right Bank of Shujabad Branch	10,000
6	-do-	Akbar Flood Bund	10,000
	Total in feet.		80,000
	Total in Miles.		15.15

D.G.KHAN ZONE			
1	Taunsa Barrage	Right Guide Bund Upstream	15,000
2	-do-	Left Guide Bund	20,000
3	-do-	Shahwala Groyne	10,000
4	Muzaffargarh Canal Division	Muzaffargarh Flood Bund	50,000
5	-do-	Doaba Flood Bund.	5,000
6	-do-	Khargarh Flood Bund	5,000
7	-do-	Khanwah Flood Bund	5,000
8	Jampur Construction Division	Jampur Flood Bund	5,000
9	-do-	Rojhan Flood Bund	20,000
	Total in feet.		1,35,000
	Total in miles		25.57
LBDC(IP)			
1	Balloki Head works Division	Left Marginal Bund	15,000
2	Do	Right Marginal Bund	15,000
	Total in Feet		30,000
	Total in miles		6
LAHORE ZONE			
1	FLOOD Bund Division Narowal	Jassar Highway Bund	10,000
2	Do	Rayya flood Bund	5,000
3	Pasrur Link Division Sialkot	City Flood Protection Bund along AikNullah	7,340
4	Do	Hajoipur Flood Protection Bund along AikNullah	86,00
5	Do	Left Flood Protection Bund over DegNullah from defence embankment to ZafarwalaKingra road	10,000
6	Marala Division UCC	Left Marginal Bund	50,000
7	Do	Right Marginal Bund	10,000
8	Lahore Drainage Div.	Shahdara Flood Protection Bund	15,000
	Total in Feet		115,940
	Total in miles		22
	Grand total in miles		114

INFORMATION REGARDING FLOOD BUND CATEGORY – B			
Sr.No.	Name of Division	Name of Embankment / Bund	Length (ft.)
SARGODHA ZONE			
1	RasulHeadworks Division	Important / Vulnerable Reaches	10,000
2	Bhakkar Division	-do-	10,000
3	Layyah Division	-do-	10,000
4	Jhelum Division	-do-	5,000
	Total in feet.		35,000
	Total in miles		6.63
FAISALABAD ZONE			
1	Khani Division	-do-	20,000
2	Jhang Division	-do-	50,000
3	Qadirabad Barrage Division	-do-	60,000
4	Burala Division	-do-	35,000
	Total in feet.		165,000
	Total in miles		31.25
BAHAWALPUR ZONE			
1	PunjnadHeadworks Division	-do-	90,000
2	Khanpur Canal Division	-do-	100,000
3	Bahawalpur Canal Division	-do-	50,000
4	Rahimyar Canal Division	-do-	50,000
	Total in feet.		290,000
	Total in miles		54.92
MULTAN ZONE			
1	Trimmu Division	-do-	80,000
2	Suleimanki Division	-do-	50,000
3	Shujabad Canal Division	-do-	60,000
	Total in feet.		190,000
	Total in miles		35.98

D.G.KHAN ZONE			
1	Taunsa Barrage	-do-	80,000
2	KotAdu Canal Division	-do-	90,000
3	Muzaffargarh Canal Division	-do-	180,000
4	River Diversion Division	-do-	80,000
5	Jampur Construction Division	-do-	140,000
6	D.G.Khan Construction Division	-do-	60,000
	Total in feet.		630,000
	Total in miles		119.32
LBDC (IP)			
1	BallokiHeadworks Division	-do-	40,000
2	Okara Division	-do-	40,000
3	Sahiwal Division	-do-	20,000
	Total in feet.		100,000
	Total in miles		18.94
LAHORE ZONE			
1	Flood Bund Division Narowal	-do-	40,000
2	Pasrur Link Division Sialkot	-do-	10,000
3	Chakbandi Division	-do-	20,000
4	Marala Division UCC	-do-	50,000
5	Lahore Drainage Division	-do-	80,000
6	Kasur Division	-do-	80,000
7	Gujranwala UCC	-do-	100,000
8	Rachna Drainage	-do-	42,000
	Total in feet.		422,000
	Total in miles		79.92
PMO BARRAGES			
1	Jinnah Barrage	-do-	20,000
	Total in feet.		20,000
	Total in miles		3.79
Grand Total (in miles)			350.76

TABLE 4.9: STONE PROCUREMENT IN 2017

Zone	Sanctioned Stone Limit	Available Stone	Balance stone Required	Cost of balance Stone
	(Lac Cft.)	(Lac Cft.)	(Lac Cft.)	(M.Rs)
D.G Khan	181.340	92.968	88.372	
Multan	38.600	33.276	5.324	
Faisalabad	44.890	34.602	10.2888	
Bahawalpur	64.520	44.900	19.620	
Lahore	90.864	30.524	60.340	
Sargodha	81.330	29.326	52.004	
PMO Barrages	32.900	22.860	8.040	
Total:-	534.444	288.456	243.988	

TABLE 4.10: DESIGNED CAPACITIES OF RIVERS AND DISCHARGE RATES

River	Gauge Site	Designed Capacity (lac Cs)	Flood Limits in Lac Cs.				Exp. High
			Low	Med:	High	Very High	
INDUS	Kalabagh	9.5	2.5	3.75	5	6.5	8
	Chashma	10	2.5	3.75	5	6.5	8
	Taunsa	10	2.5	3.75	5	6.5	8
JHELUM	Kohala	12	1	1.5	2	3	4
	Mangla	10.6	0.75	1.1	1.5	2.25	3
	Rasul	8.5	0.75	1.1	1.5	2.25	3
CHENAB	Marala	11	1	1.5	2	4	6
	Khanki	8	1	1.5	2	4	6
	Qadirabad	9	1	1.5	2	4	6
	Trimmu	6.45	1.5	2	3	4.5	6
	Punjnad	7	1.5	2	3	4.5	6
RAVI	Jassar	2.75	0.5	0.75	1	1.5	2
	Ravi Syphon	4	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	1.3
SUTLEJ	G.S.Wala	10 ft.	19.5	21.5	23.3	25.3	
	Suleimanki	3.25	0.5	0.8	1.2	1.75	2.25
	Islam	3	0.5	0.8	1.2	1.75	2.25
	Mailsi Syphon	4	0.75	1.1	1.5	2.25	3

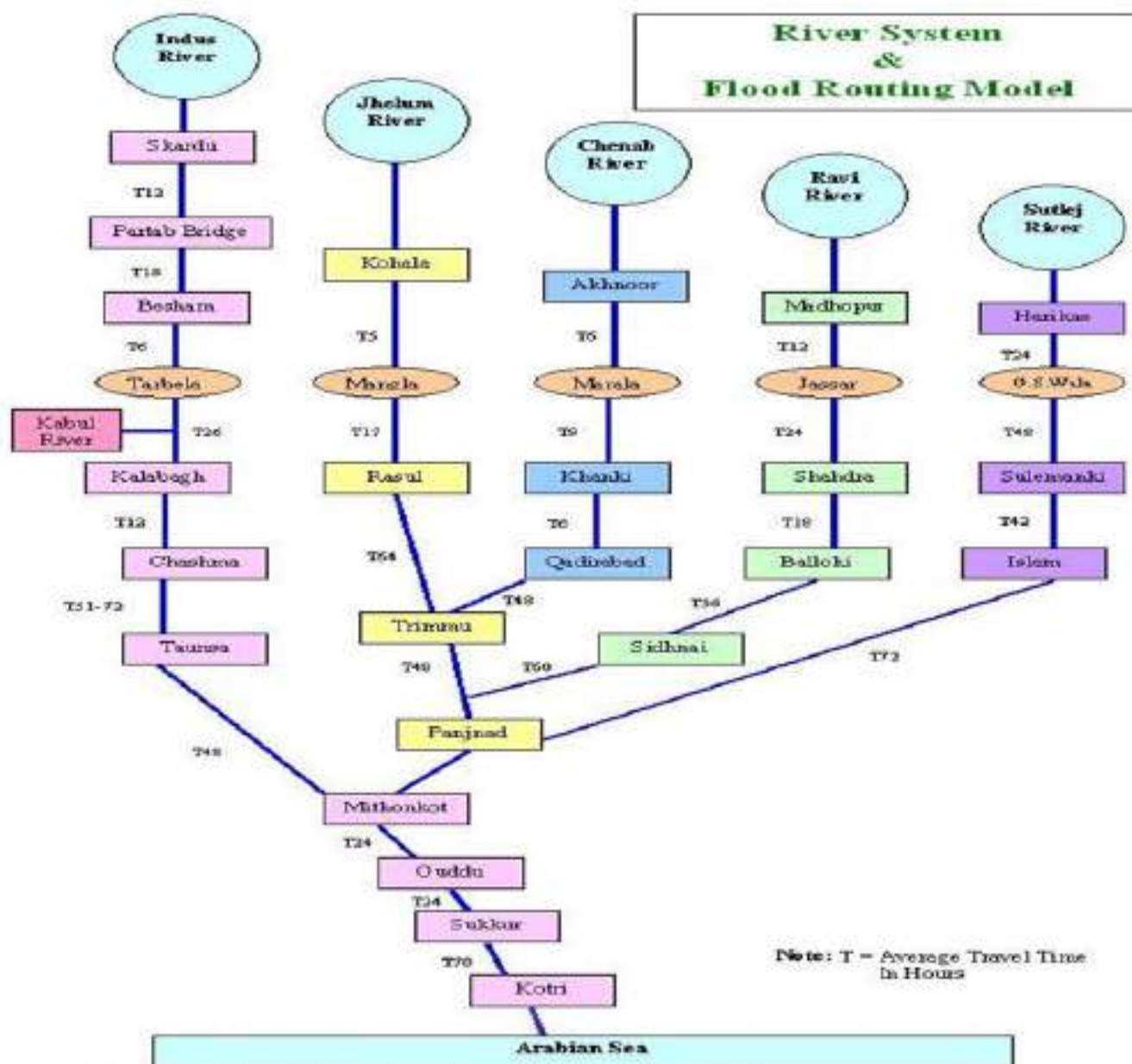
TABLE 4.11: NUMBER OF BREACHING SECTIONS IN PUNJAB

Department	Number of Breaching Sections
PID Punjab	13
Pakistan Railways	04
NHA / Provincial Highways Department	02
Total	19

FIGURE 4.10: IRRIGATION ZONES IN PUNJAB



FIGURE 4.11: RIVER SYSTEM AND FLOOD ROUTING MODEL IN PUNJAB



4.3.4 PUNJAB EMERGENCY SERVICE (RESCUE 1122)

4.3.4.1 THE DISASTER RESPONSE FORCE (DRF)

Government of the Punjab has notified a Disaster Response Force (DRF) under the PDMA comprising Rescue 1122, Civil Defence, and the District Disaster Coordinators. 1122 and the Civil Defence make up the working and implementing arm of the DRF. It would comprise of 7,500 personnel of Rescue 1122, trained in water rescue and generally any form of disaster. The DRF would be under the operational command of Rescue 1122. PDMA has already provided 210 boats to Rescue 1122 for rescue and evacuation efforts. The Disaster Response Force would carry out sophisticated search and rescue and evacuate affected and vulnerable people. To manage the high number of operations during a disaster, Rescue 1122 would establish a Provincial Monitoring Cell at its headquarters in Lahore. This monitoring cell along with Rescue 1122's command and control room would be operational around the clock and would also be linked with the 4C at PDMA through video conferencing and

radio link.

Rescue 1122 organization has been established for immediate response to emergencies and disasters. 1122 specializes in the provision of emergency medical treatment to persons affected by emergencies. PES evacuated about thousands of victims from the flood hit districts of the province specially Jhang, Muzaffargarh, and Multan during the recent floods of 2014 in the river Chenab. They are trained in sophisticated search and rescue techniques and 1122 is Punjab's foremost rescue agency. The agency possesses multipurpose rescue vehicles that contain essential rescue equipment such as heavy duty hydraulic cutters, spreaders, and electronic search and rescue devices. Apart from the Rescue vehicles the agency also possesses Ambulances, Fire fighting vehicles, Water Browsers, Water Rescue vans, Recovery vehicles, Boats, OBM Engines, Life Jackets, Rings and Buoys etc.

4.3.4.2 ROLES AND RESPONSIBILITIES

RESCUE 1122 ASSISTS THE DISTRICT ADMINISTRATION IN:-

- The immediate evacuation of people from the disaster prone and vulnerable areas.
- Provision of immediate medical aid during any emergency and at the same time transporting the injured or sick to the nearby hospital through their team of ambulances.
- In flood situations rescuing people from drowning in the strong currents is a specialty of 1122 as it has its own set of divers and boats. Similarly in case of collapsed buildings or structures the
- equipped with heavy machinery to cut through heavy debris.
- Apart from that responsible deployment of fire fighters, cordoning of hazardous areas, provision of first aid and medical treatment, immediate search and rescue of victims and management of the pre-hospital emergency system.
- Rescue 1122 is well trained in setting up medical camps for provision of emergency medical treatment. These camps are setup by Rescue 1122's doctors and paramedic staff.

FIGURE 4.12: RESCUE 1122 PUNJAB



4.3.5 HOME DEPARTMENT

Home Department has six major implementation arms for disaster management activities: Police Telecommunication Department, Police Operations Department, Civil Defense, Special Branch, Traffic Police and Rescue 1122. The Police Department is generally responsible for law and order situation but in case of disaster the department will follow the Standard Operating Procedures (SOPs) issued for a disaster situation by the home department. The primary objective of the Police is to save human lives, and to protect vital infrastructure, installations, machinery, equipment, stock of resources and to maintain law and order during emergencies/disasters. The department has to make arrangements for traffic control, and planning alternative routes during evacuation and maintaining law and order at the time of evacuation and in relief camps. Roles and responsibilities are as under:-

- The wireless system and control rooms already established by the PDMA and Irrigation department would be networked with the Police control. Most of the police staff active in the field would be equipped with mobile wireless sets. DSP/Tele (TP) and Inspector Workshop will be responsible for the supply of these wireless sets to different areas and these officials would also work for prompt repair of all nonfunctional equipment.
- Police should lay special emphasis on ensuring the security of the personnel of the international humanitarian organizations, donors, and embassies, visiting the affected areas.
- Police should ideally also be trained in search and rescue, evacuation, first aid and emergency response in collaboration with Civil Defense and Rescue 1122.
- Police would support district administration in evacuation of affected people and transport to camp sites. The police personnel must maintain law and order situation at the camp sites, relief centers, distribution points and shelter sites.
- The department has to keep close watch for any criminal and anti-state activity in the area activities.
- Police would draw up security plan for evacuation routes, warehouses, relief camps, relief centers, distribution points and public/private property for any potential disaster in the district and share it with DDMA.
- Police has to ensure the security of all key points such as siphons, bridges, link drains etc. All police mobiles would be equipped with extra torches, rubber tubes, shovels, snake bite kits, and life buoys etc.
- Police would plan an active role in the relief disbursement by assisting in the supply and distribution of food and other relief items
- SP (Operations) will spear head the patrolling of affected areas and evacuation routes. He would plan a shift wise system of patrolling duties to maintain law and order around the clock. Patrolling must be provided on the designated routes of relief supply. The Police would assist the district administration and Rescue 1122 in the evacuation of people at risk.
- Police manages traffic during a disaster situation and develop alternative traffic management plan to avoid inconvenience. The Police have to coordinate with the C&W or Highways Departments to direct traffic towards alternative routes.
- Police will also be engaged in forced evacuations in case a disaster becomes imminent and local communities continue to underestimate the destruction that a disaster might cause. In case heavy duty electric lines get ruptured and fall down, the Police would cordon the area before informing WAPDA to take care of the issue.
- Police Telecommunications branch will provide the communication support to PDMA, Irrigation department or other departmental personnel responsible for patrolling the vulnerable areas. The Police Telecommunication department would deploy its personnel to the affected areas. These teams would be equipped with high frequency sets, ultra-high or very high frequency base sets, battery chargers etc

4.3.6 CIVIL DEFENCE

Civil Defence force assists the district administration in the evacuation of people and their properties from the disaster affected areas.

- The Directorate engages a large number of volunteers for search, rescue, evacuation and disbursement of relief goods. These volunteers generally known as “Razakars” are usually trained in swimming, rowing, handling of OBM, basic rescue techniques, first aid etc.
- Civil Defence Razakars basically help local administration / police and Pakistan Army, Rescue 1122 in evacuation and other disaster response activities.
- Razakars manage and utilize all boats, oars, out board engines, generators, search lights, and other lifesaving

equipment. Razakars that know how to swim and dive are utilized for specialized water rescue.

- These volunteers also assist the fire brigade in rescue, and Health department’s representatives in the treatment of injured victims.
- Civil Defence also assists the District Administration and Police in setting up information desks for general public in emergencies.
- The civil defence Razakars are very helpful in management of relief camps setup by the district administration in disaster situations, performing watch and ward duties as well managing distribution points.

4.3.7 HEALTH DEPARTMENT (PRIMARY & SECONDARY HEALTHCARE DEPARTMENT AND SPECIALIZED HEALTHCARE AND MEDICAL EDUCATION DEPARTMENT)

Government of Punjab is providing primary, secondary as well as tertiary health care services throughout the province with an infrastructure of 2,456 Basic Health Units (BHUs), 290 Rural Health Centers (RHCs), 81 Tehsil Head Quarter (THQ) Hospitals, 36 District Head Quarter (DHQ) Hospitals and 19 Teaching Hospitals. The public sector health delivery system comprises of four tiers and as such will continue to provide services at these four tiers during and after any disaster

Outreach and Community Based Activities, which focus on immunization, sanitation, malaria control, maternal and child health, and family planning. Primary care facilities include BHUs, RHCs, THQs and DHQs provide inpatient and outpatient care. Tertiary care hospitals located in the major cities for more specialized healthcare.

In case of any disaster or calamity the health department will ensure that the following measures are in place:-

- To provide first aid to the injured people and arrange evacuation of patients for further assistance.
- Medical camps and mobile health teams should be arranged for prevention and control of communicable diseases, immunization and provision of essential drugs.
- Health department would make a roster of all medical officers and paramedics that would be deployed to these camps and teams.
- Drugs and other medical equipment should be available at all these camps and with mobile teams. The medicine should be for relevant flood related issues.
- The shelters or relief camps established by the district administration should have medical centers with ambulances and special facilities for women and children.
- An emergency control room will be established in the office of Directorate General Health Services and a representative of this emergency control room would be designated to PDMA's control room.
- A list of essential medicines would be prepared by the Health department and it would ensure that medicines and other resources are present in sufficient stocks in hospitals in disaster hit areas.
- Medical colleges may be involved to create Emergency Response teams
- Health department would also coordinate with international organizations such as WHO and UNICEF.
- Extensive disease surveillances in the disaster hit areas should be carried out warnings if needed be issued through the Disease Early Warning System.
- Medical teams and paramedic staff should be mobilized and deployed for rapid assessment and quick response in the affected areas.
- A contingency plan will be prepared and submitted regarding preparedness for any disaster or calamity.
- The National Disaster Management Authority has designated WHO as the key organization that will fill the gaps in the supply of medicines, rapid diagnostic kits, and vaccinations etc.
- CEO District Health Authority would oversee

all activities related to health in the district and employ female health workers in emergency areas specially, for spreading awareness regarding health risks in a disaster and for any vaccination or immunization programme that may be needed during any emergency.

- A Health and Nutrition Cluster for overall management and oversight of Health department's disaster response would be formed at the Directorate General Health office.

- In case the medicine stocks or even the infrastructure is damaged due to floods, the department would draw up a plan for early recovery of health infrastructure and service delivery.

4.3.8 EDUCATION DEPARTMENT

Education Department is the largest department in terms of manpower and infrastructure. During any emergency their manpower comes in very handy as they are well educated and are technology savvy.

- The school buildings would be used to establish relief camps and distribution points. These school building are normally the first choice for setting up relief camp as they provide safe shelter with basic utilities.
- The schools are also used to accommodate armed forces that are available to help the district during any disaster. Government Schools provide large open places as well which suits the forces.
- The CEO District Education Authority would mobilize teachers and staff members to help the affected district administration in the conducting of various surveys and assessments during and after the disaster or floods.
- The staff and teachers of the department are also very useful in relief camp management and the CEO District Education Authority should issue duty rosters in coordination with the district focal person.
- A large part of the displaced persons comprises of women. The female staff and teachers of the department should be employed to handle the females during camp establishments, registrations, distributions etc.
- CEO District Education Authority would ensure that proper surveys of damages to school buildings are conducted and details conveyed to the provincial government and PDMA .
- Extended stay at relief camps for longer durations can create educational shortcomings. Therefore the Education department would also consider the setting up of emergency mobile schools and provision of teaching material to continue education during the emergency.
- The department would compile a roster of the volunteer teachers and students who can be deployed as workforce in emergency response. Teachers and students would also provide voluntary assistance in disaster assessment and distribution of relief goods in the affected areas.
- Education department would also prepare a list of Government schools and colleges that may be used for relief camps

4.3.9 COMMUNICATION AND WORKS DEPARTMENT

C&W Department is responsible for planning, execution, development and maintenance of all Provincial Roads and Bridges for maintenance of the communication infrastructure. The department takes steps to ensure speedy repair and restoration of transport and communication links. During any disaster such as floods, earthquakes etc. the communication infrastructures such as bridges are damaged, the C&W department restores and repairs the infrastructure to restore communication. The C&W department has divided its geographic jurisdiction in Provincial Highway Circles, headed by a Superintending Engineer who is responsible for disaster response in his particular circle. In case of any disaster or calamity the C&W Department will ensure that the following measures are in place:-

- Executive Engineers supervise the local emergency response and ensure provision of equipment such as heavy machinery, torches, lamps, red lights and even the steel floating and bailey bridges to the district administration when needed. The C&W department possesses five bailey bridges and six floating or boat bridges.
- C&W department will conduct an immediate survey of the calamity hit area in order to assess damage to local roads bridges and allied infrastructure. Repair work is based on this early survey and analysis. The department also prepares alternative route plans to guide commuters to roads that are still open and safe for thoroughfare.
- Bridges are important links in any road network and their repair and restoration is critical for rehabilitation. The help of the Pakistan Army's similar resources may be called in if needed.
- In case a particular road or bridge is damaged by the disaster, the Sub Divisional Officer along with Executive Engineer In-charge would visit the affected site and report the extent of the damage and possible remedial measures to the Superintending Engineer and Chief Engineer.
- Executive Engineer would then inspect the possibility of diverting traffic on other roads and would impose speed and load restrictions on roads that are susceptible to any damage. In case the road is blocked by a landslide or falling debris is threatening ongoing traffic, the Sub Engineer and Road Inspector will blast the land mass with explosives and clear the rest of the debris with heavy machinery or manual labor
- C&W department also assists the Irrigation Department and Army with the opening of breaching sections or as was seen in the recent floods in breaching bunds and other structures.

4.3.10 AGRICULTURE DEPARTMENT

Agriculture is mainstay of Pakistan's economy. It accounts for 21% of the GDP and together with agro-based products fetches 80% of the country's total export earnings. More than 48% of the labor force is engaged in this sector. The role of the agriculture department is therefore of vital importance. The basic aim and purpose of this department is to sustain food security and support the national economy, making agriculture cost effective and knowledge based, with emphasis on farmer's welfare and increased yield potentials with Improvement of agricultural and water management methods. The agriculture department is actively involved in providing protection against insects, pests, augmenting prevention of plants diseases through quality control of pesticides. The department is directly involved in enhancing soil fertility and strives for soil conservation Mechanization, reclamation of land, use of agriculture machinery ploughing, tube-wells and installation and research Agricultural Engineering (Agricultural Machinery and Implements) are some of the important functions of the department.

In case of any disaster or calamity, Agriculture department will ensure that the following measures are in place

- Agriculture Department is responsible for the assessment of standing crop losses. This exercise can be conducted in coordination with the revenue department as their record is useful in crop assessment. The field assistants have been provided with electronic tablet devices and these can be used affectively for conducting of field

surveys.

- Agriculture department has to immediately report on the standing crop losses and this initial survey helps formulate any compensation policy.
- Agriculture department also has heavy farm machinery which can be used to help build protection bunds or other structures. Similarly heavy machinery could be used by other departments such as Irrigation or C&W.
- The entomologists of Agriculture department would also exercise vigilance about pest attack on the crop and take effective measures against it.
- Provision of fodder for Livestock is very important for during disasters as there is acute shortage of fodder. The department is therefore actively involved in the management of fodder in collaboration with Livestock & Dairy Development Department and ensures that the fodder is available along with feed supplements such as Wanda etc.
- In order to ensure that there is no shortage of any vegetable for human consumption the department should be actively involved in monitoring of markets and Mandi etc.
- Agriculture department has many off road vehicles which can also be employed to visit areas that are normally off road and not easily accessible.

4.3.11 LIVESTOCK & DAIRY DEVELOPMENT DEPARTMENT

The Livestock sector plays an important role in the rural economy of Pakistan. Its role is very critical as 30-35 million of the rural population is engaged in livestock raising. The average household holdings are 2-3 cattle/ buffalo, 3-4 sheep/goats and 10-12 poultry per family which contributes 35-40 percent of their income from livestock. The role of this sector is very important and it is a major contributor to the agriculture sector of our economy. In case of any disaster or calamity the department will ensure that the following measures are in place:-

- The primary responsibility of the department is to save animal and poultry population from any direct injuries or fatalities and infectious diseases during and after the disaster.
- In case of mass evacuation of population and their livestock the livestock department in coordination with the district administration should identify suitable and safe where these animals can be kept.
- The department will setup mobile veterinary camps in and around the disaster affected areas. These camps will contain all the medicine for controlling water borne diseases and epidemics. The department will exercise extreme vigilance about disease outbreaks in the disaster area.
- The department would coordinate with Transport department and district administration for rescue operations particularly involving large animals such as cattle and buffaloes.
- District Livestock Officers would arrange for large scale vaccination specially for diseases such as hemorrhagic septicemia and foot and mouth disease. This is supported by de worming of the animals.
- The department would also arrange for fodder for the animals. In disaster situations there is an acute shortage of fodder and the livestock department should arrange fodder from outside the district. Furthermore wheat straw or hay stacks and bundles should be arranged and made available for animals. Similarly feed supplement by the four Government owned feed mills at Bohadar-Nagar, Bhuneikay, Rakh Dera Chahl and Kharimourat.
- The department would conduct a rapid assessment of damages to livestock and provide
- financial and technical resources to the district livestock departments for immediate provision of medical and material relief
- The department would also oversee procurement and replenishment of reserve stock of medicines, vaccines and flood fighting mission.

TABLE: 4.2 LIVESTOCK FIELD FORCE 2017

Livestock Field Force	Number
Flood Sectors / Centers	435
Flood Sub-sectors	289
Veterinary Officers	461
Veterinary Assistants	1325
Mobile Veterinary Dispensaries	88

4.3.12 HOUSING, URBAN DEVELOPMENT & PUBLIC HEALTH

ENGINEERING DEPARTMENT (HUD & PHED)

Major stakeholders of Housing Department are WASAs (Water And Sanitation Authorities) and PHED (Public Health Engineering Department). Major roles and responsibilities are:-

- Public Health Engineering Department (PHED) is responsible for provision of proper and clean water and sanitation facilities. Disruption of the existing water and sanitation system puts the affected population at risk of numerous diseases. In post disaster scenarios, there is usually a high risk of sewer water mixing into clean water channels in areas that are totally inundated causing outbreak of various diseases. Also the under ground water is not usually fit for drinking.
- The department works to protect water from contamination by continuous water treatment and health education awareness in the disaster affected areas. The department conducts an assessment of water and sanitation schemes damaged by a disaster and prepares plan for fast track rehabilitation.
- WASAs (Lahore, Multan, Rawalpindi, Gujranwala and Faisalabad) can arrange to clear the water logged areas by employing heavy machinery such as Jetting units, Suction units, Dump Trucks, Backhoes, Front end loaders, Excavators and Cranes. The dewatering sets should be fully functional prior to the monsoon season and the ponding areas should be inspected for any problems. WASAs should also arrange spare manhole covers to immediately respond to any such need. De-silting should be completed before the onset of Monsoon season. WASAs should remain vigilant in case of flash / urban flooding.
- In case of a contamination in a certain area; WASAs should conduct the disinfection of water through chlorination or use of bleaching powder. WASAs should then regularly monitor the water contamination by testing samples at PHED's water testing laboratories.
- The department is also responsible for the restoration of sewerage systems and sanitary conditions in affected areas. The department conducts rapid assessment of water and sanitation in the affected areas and provides safe drinking water to the affected population in emergency situations.

4.3.13 SOCIAL WELFARE DEPARTMENT

The Social Welfare department has to coordinate with all CBOs/NGOs, INGOs, UN organizations, and Rural Support Networks to provide relief to the victims of a disaster and rehabilitate them. During any emergency or disaster the social welfare department represented by the Directors and Deputy Directors Social Welfare in the districts will ensure the following measure and steps.

- This department must maintain a list of all NGOs and donors articulating their key operations and ensuring that the NGOs are working in line with the government policies.
- The Social Welfare department would monitor social protection issues in IDP Camps with a particular focus on the status of women and children.
- The department would coordinate with the DDMA's to ensure that needs of most vulnerable groups such as minorities, disabled, elderly, and widows are addressed in all possible ways.
- The department would assist the DDMA's in the management of relief camps, distribution of relief goods and the assessment of damages.
- The department will also play a major role in child protection by opening Child Welfare Units in the disaster affected areas catering to child victims of gender based violence, psychological trauma and physical harm.

4.3.14 INFORMATION DEPARTMENT

Information department reports on the extent of disaster and highlights the measures that the Government of Punjab would be undertaking for rescue and relief operations. All the relevant information on the disaster and the provincial government's response would be communicated to all the media channels. The department has a district information officer in each district who is in close liaison with the district administrations and continuously reports on the measures and steps undertaken by the district. Information department coordinates with all the media channels and networks and ensures that fact and figures are properly reported and projected for the general public.

- Dedicated team to be appointed by DGPR for performing duties and conducting media campaigns during flood season from 15th June to 15th October in PDMA Control Room.
- Information department would try to minimize sensationalism specially in the portrayal of disaster management and facts. All efforts would be made to check and limit any propaganda or news that in effect defames, ridicules or undermines the Governmental response. Proper facts and figures will be regularly conveyed to all media houses through regular media releases.
- Constructive criticism of media is immensely

important to reorient the Governmental response; hence, the Information department is responsible for differentiating between rightful criticism and baseless negative propaganda that can spread hopelessness at the time of a disaster

- PDMA Punjab would seek media's cooperation in delivering early warnings and information on evacuation routes etc. In case of epidemic disasters, the media can be engaged to relay messages about preventing communicable diseases.
- It also provides information on the relief and recovery efforts of the Government and other humanitarian organizations. The media highlights the gaps in relief and rehabilitation allowing the Government to prioritize its provision of relief services. The Information department would ensure that the news-items relating to a disaster present an accurate picture of the actual position and do not create undue panic.
- The department would make sure that media is giving due air time and attention to the Government of Punjab's remedial measures and response efforts. The Information department would continuously communicate the information about the short and long term measures undertaken by different departments for relief and rehabilitation of affected people

4.3.15 LOCAL GOVERNMENT & COMMUNITY DEVELOPMENT DEPARTMENT

L G & CD department basically is the parent department of all Municipal Corporations / Committees. It would therefore issue suitable instructions to all Municipal Corporations / Committees to ensure the availability of proper equipment and human resources that are required to dispose waste, and deliver clean drinking water in the disaster affected areas. Although the Municipal Corporations / Committees are working under the district administration but from time to time suitable instructions are issued from the department as well regarding provision of clean drinking water, maintenance of proper sanitation and general assistance of the district administration.

- The department would also have to coordinate with International and national non-Government agencies working on water/sanitation activities. The Local Government has to reduce the chances of such medical emergencies by keeping a close watch on the sanitary conditions of the disaster

affected area.

- The primary objective is to ensure that the disposal stations and main drains are open and functional. All machinery available with the Municipal Corporations / Committees should be functional and working. This department would maintain a close coordination with both Water and Sanitation Authority and Solid Waste Management. The Local Government department has the ability to mobilize heavy duty machinery such as tractors, front end loaders, sewer sucker, jetting machines, water bowsers, dewatering sets and generators etc.
- The department should ensure that all De-Watering sets, Generators and other machinery are in functional condition before the onset of Monsoon season and that skilled manpower is present to operate the machinery etc.

4.3.16 INDUSTRIES DEPARTMENT

The department is entrusted with the task of ensuring a regular supply of Petroleum, Oil and Lubricants (POL) and essential edible commodities throughout the disaster response. Any shortage in POL would jeopardize all response efforts, including rescue, evacuation or relief provision.

- Industry department coordinates with the leading Oil Marketing Companies (OMC) to maintain a reserve stock of POL. This department works with Total PARCO, Chevron Pakistan, Pakistan State Oil, and Shell Pakistan to encourage them to store reserve stocks in various geographical regions of

the province.

- The Department will provide PDMA a list of depots where the reserve POL has been stocked.
- All OMCs take necessary measures in time to maintain reasonable stocks or reserve quantities of fuel and lubricants for a period of one month.
- The officials of industries department visit the depots where reserve stocks are maintained to ensure uninterrupted supply of fuel to consumers during flood season.

4.3.17 FOOD DEPARTMENT

Food Department would ensure the protection of Wheat stocks against all sorts of disasters. The stocks piled in flood prone areas would be protected by the construction of embankments or the deposition of sand/soil bags around the stock.

- In case heavy flooding is expected the wheat stock should be removed to safer locations before the onset of the disaster. In case the storage area is waterlogged then, the department would make arrangements to drain out the water.
- The department would coordinate with the operational flour mills in the disaster affected areas to arrange a supply of flour that would then be distributed in flood affected areas and relief camps.
- The food department would keep a watch on the market prices of the wheat and should take all possible steps to prevent an exceptional rise in the prices that could result due to the shortage of food after the disaster.

4.3.18 PAKISTAN ARMY

Pakistan Army's resources are employed for immediate search, rescue and evacuation. Pakistan Army is called in the 'Aid of Civil Power' only when a disaster overwhelms the resources at the disposal of the Government of Punjab. The Army's setup in Punjab is administratively divided into six Corps with a Corps Commander leading each Corps. Roles and responsibilities are as under:-

- The Deputy Commissioner of the affected district would request the relevant Army Authorities for aid of Army upon the approval of the Home Department.
- PDMA has provided the Army with 850 boats and OBMs for rescue and evacuation purposes. PDMA annually pays for the repair and maintenance expenditures of these 850 boats. During rescue operations at times the use of boats is not possible or feasible. In such circumstances helicopters are used from the army aviation authorities.
- Pakistan Army in collaboration with the Irrigation and C&W departments plays a substantial role in the opening of breaching sections and or breaching of bunds. During the unprecedented high floods in the Chenab River in 2014 various protection bunds and bridges had to be breached to protect the population in Multan and Jhang districts.
- In case a disaster disrupts the existing telecommunication channels in a certain area, Pakistan Army would spearhead or assist the installation of wireless stations.
- In case of high floods, the respective Corps Commanders would setup Flood Relief Committees, consisting of but not limited to Commander Corps Engineer, Commander Corps Signals, Chief of Staff, Colonel.

4.3.19 PAKISTAN METEOROLOGICAL DEPARTMENT

The primary function of this department is to provide an early warning of a natural hazard. This department continuously monitors various meteorological factors such as rainfall, temperature, atmospheric pressure, etc.

- The department issues weather forecasts on a regular basis through electronic and print media and to all the concerned districts and provinces about any random change in weather pattern that can be a reason of concern. However some natural disasters are not possible to predict such as earthquakes and tornadoes.
- The monsoon prediction for this year is that there will be a delayed monsoon and more drought like conditions may prevail in the Cholistan area. However floods have not been completely ruled out. This is mainly due to the fact that there have been pre monsoon rains and the two major dams i.e. the Tarbela and Mangla have already attained their full capacity. Therefore with little storage capacity any amount of monsoon rain can lead to flooding if not properly managed. However, as seen in the previous floods at times the amount of rain is not directly proportional with the floodwaters in the rivers.
- PDMA Punjab establishes a Flood Warning Center at MET office Lahore for better coordination and dissemination of timely information.

4.3.20 WATER AND POWER DEVELOPMENT AUTHORITY (WAPDA)

Ministry of Water and Power conducts periodic monitoring and inspection of dams and provides telemetric data from rain gauge stations and flood data from Indus River Basin, to the Flood Forecasting Division of the Pakistan Meteorological Department.

- The Ministry also coordinates with the Indian counterpart to remain informed about the water levels in the shared water channels. The Water and Power Development Authority (WAPDA) collects and transmits rainfall and flood discharge data. This data is collected by Automatic Flood Telemetry Systems maintained by WAPDA.

4.3.21 FEDERAL FLOOD COMMISSION (FFC)

FFC is a federal department responsible for coordinating efforts aimed at reducing the risk of floods.

- FFC reviews the capacity of flood protection works such as embankments and overcomes the shortcomings by enhancing the physical structures that preclude an over flow of waters from water channels such as rivers or canals.
- FFC engages various contractors to remove the excessive silt in the canals and strengthen areas where a breach might occur.
- FFC keeps providing PDMA with regular updates on the flow rates and volumes in different rivers of the Province.

CHAPTER 5

PDMA PUNJAB IN 2017 – REVAMPING INITIATIVES

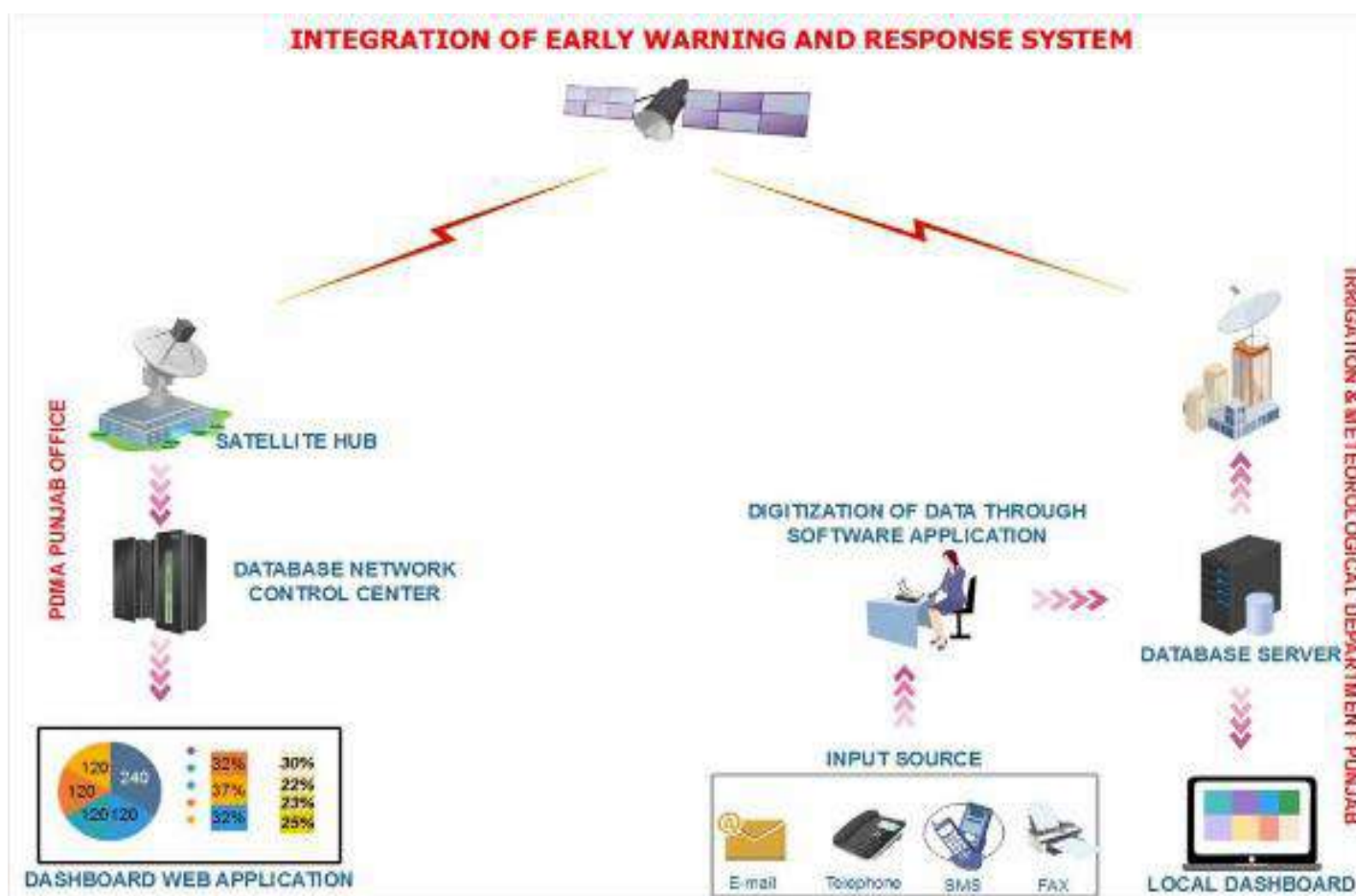
PDMA Punjab in recent years has tried to adopt a Pro-Active approach rather than a Reactive one. IT interventions have been considered as one of the linchpins to modernize the existing systems. Following revamping initiatives have been taken in 2016-2017 to equip PDMA Punjab with state of the art IT automation facilities to raise the bar of its preparedness activities.

5.1 INTEGRATION OF EARLY WARNING SYSTEM (SURVEILLANCE AND INTERCONNECTIVITY)

PDMA Punjab is determined to integrate early warning system through interconnectivity in order to have a consolidated information system at one single platform. This initiative primarily aims at connecting MET Office Lahore; for weather

forecasting, rainfall monitoring, Punjab Irrigation Department; for monitoring inflow and outflow situations of all important barrages / headworks and nullahs, Rescue 1122 for real time monitoring of rescue and relief efforts.

FIGURE 5.1: INTEGRATION OF EARLY WARNING SYSTEM



5.2 SATELLITE BASED NETWORK CONNECTIVITY

PDMA Punjab is establishing a reliable satellite based network connectivity with 20 remote offices (DDMA offices) in districts in order to provide broadband connectivity to disaster management and other provincial offices. The planned IP based private VSAT system is envisioned to provide a cost effective, reliable single connectivity platform with centralized monitoring and control. A single point of contact is made for operation,

maintenance, fault isolation and troubleshooting to provide high service quality and management of the system. The centralized station will be located at Lahore. The required system is based on DVBS2/ DVB-RCS2 VSAT system with star topology with DVBS2 on Outbound and DVB-RCS2 on inbound. The systems is based on one Hub equipment including 4m Hub antenna, VOIP Hardware, 20 complete sets of remote stations and 02 DSNG Vehicles.

FIGURE 5.2: SATELLITE BASED CONNECTIVITY



5.3 INVENTORY MANAGEMENT SYSTEM

PDMA Punjab has developed an Inventory Management System to ensure transparency and accountability in warehouse transactions. This includes, installation of CCTV cameras at Jallo Warehouse Lahore and Muzaffargarh Warehouse, Muzaffargarh including laser fencing. IMS will facilitate recording and automation of every transaction for sending and receiving shipments. It supports multiple catalogues of Items and provide alternative items to ensure more effective use of supplies. It allows PDMA Punjab to manage requests, donations and inventory check in and check out at each and every warehouse.

FIGURE 5.3: PDMA PUNJAB IMS

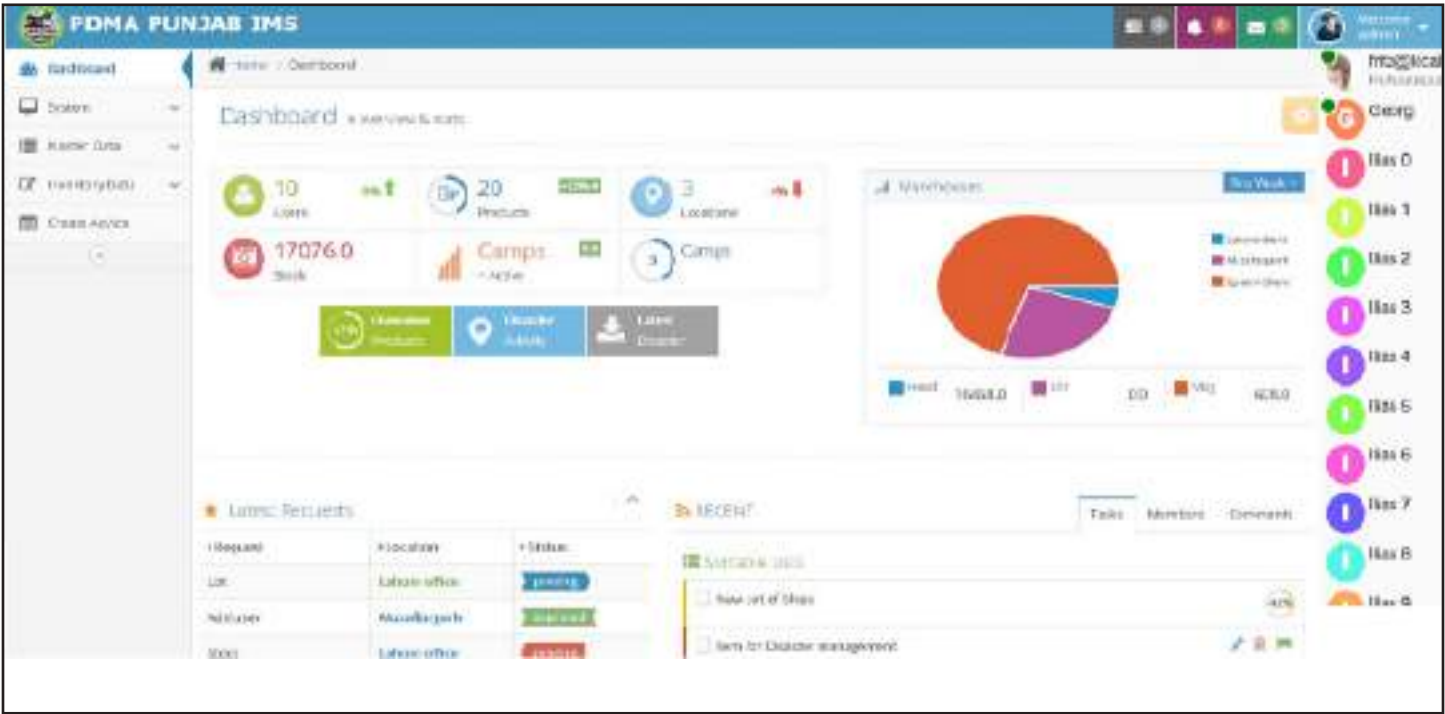


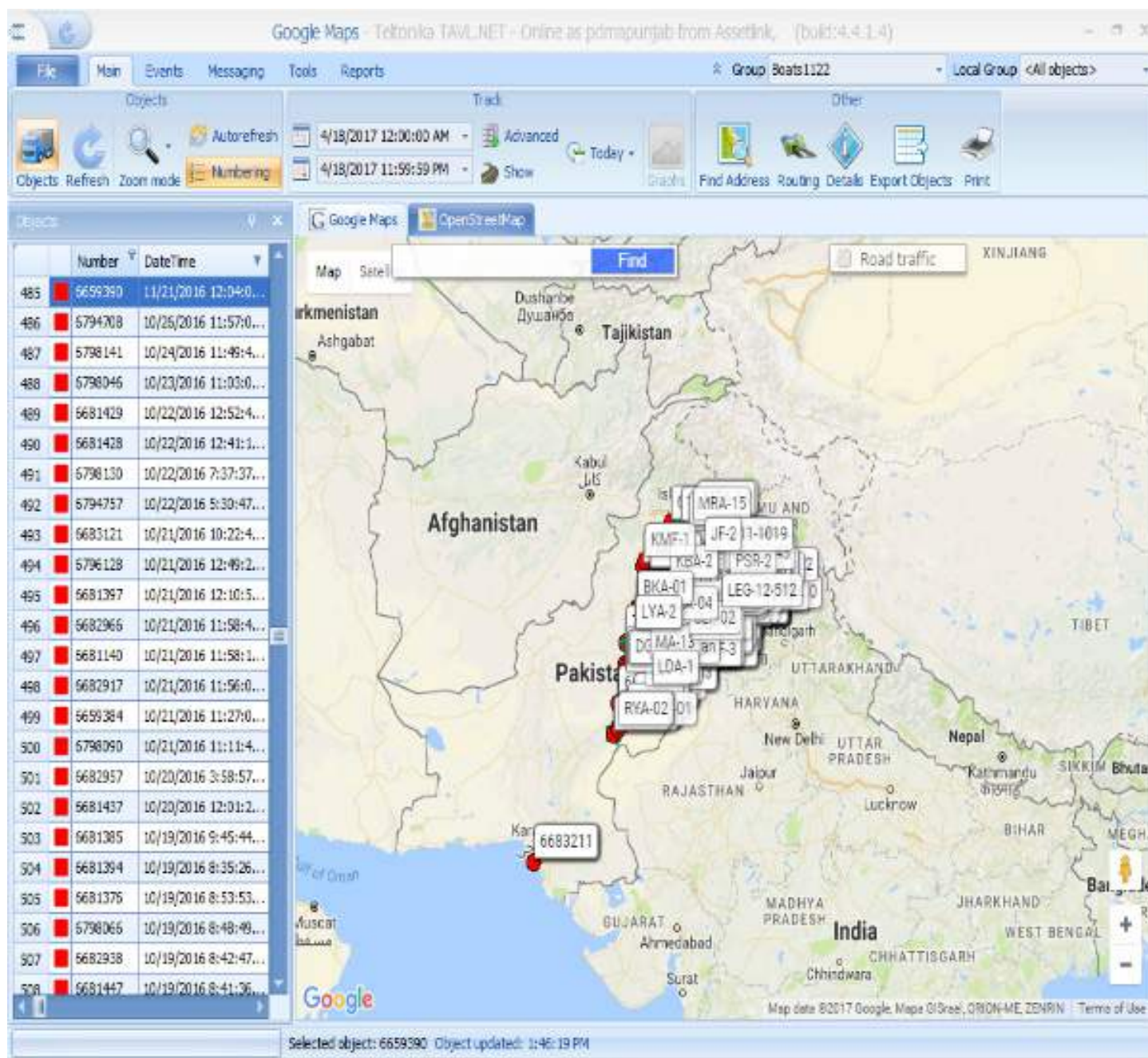
FIGURE 5.4: REAL TIME MONITORING OF RELIEF ITEMS & WAREHOUSES


5.4 SATELLITE BASED TRACKING SYSTEM

PDMA Punjab has installed Trackers in all Rescue Boats / OBMs, PDMA vehicles and Ambulances of Rescue 1122 for better monitoring of rescue and relief activities and having real time data. The Satellite based tracking system

has salient features like Web Based Real-Time Tracking, Location Monitoring, Over Speed Alert, Panic Button, On Demand Pin Point Location, Battery Status, Geo-Fence and etc.

FIGURE 5.5: SATELLITE BASED TRACKING SYSTEM



ANNEXURE 1

DISTRICT DISASTER MANAGEMENT PLAN 2017

Division: XYZ
District: ABC



IDP Camp in 2009



Earthquake



Floods in 2014



Fire incident at Lahori Gate, Lahore – Jan 2016

Prepared and Approved by:



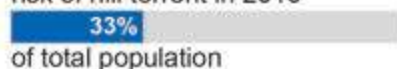
TABLE OF CONTENTS

Executive Summary	
Aim and Objectives	
District Profile	
Risk Analysis	
Mitigation Strategy	
Rescue Strategy	
Humanitarian Assistance	
Annex I: Identified sites for displaced persons	
Annex II: List of hazard prone villages/ Revenue Estate (names required)	
Annex III: List of Health Facilities and their vulnerability to Hazards	
Annex IV: List of vulnerable Educational institutions	
Annex V: List of Industries with their risk level	
Annex VI: List of NGO working in the District	
Annex VII: Contact list of main stakeholders / departments	
Annex VIII: List of volunteers	
Annex IX: Political Constituencies	
Annex X: Local Government	
Annex XI: Data Collection Performas	
Annex XII: Camp Management SOPs	

EXECUTIVE SUMMARY

00

Estimated number of people at risk of hill torrent in 2016



Risk: High

XX

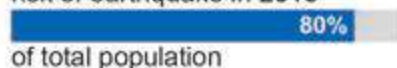
Estimated number of people at risk of Hill Torrent in 2016



Risk: Medium

XX

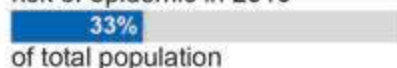
Estimated number of people at risk of earthquake in 2016



Risk: Low

XX

Estimated number of people at risk of epidemic in 2016



Risk: Medium

AIM AND OBJECTIVES

The plan is aimed to manage emergencies by putting in place requisite mitigation measures and a well-coordinated and integrated response at district level.

The main objectives of the plan include:

- To develop a plan of action for the District Disaster Management Authority and other district stakeholders to set priorities and provide directions for disaster management;
- To define the roles of various stakeholders in disaster management in all the phases pre, during and after disaster;
- To raise awareness of stakeholders about disaster risks and the requirements for disaster management;
- To introduce coordination mechanism for immediate response and rehabilitation at district level;
- To enhance the effectiveness and timeliness of emergency response through the clarification of goals, strategies, roles and responsibilities;
- To strengthen response coordination between government departments and humanitarian organizations (UN agencies, I/NGOs);

Socio-Economic Indicators (Average)

S. No.	Particulars	Numbers
1.	Population	
2.	No. of Tehsils	
3.	No. of UCs	
4.	No. of Revenue Estates	
5.	Population Density (people per km2)	
6.	Family Size	
7.	Pop Growth Rate	
8.	PCI	
9.	District GDP/Annual Income	
10.	Poverty Rate	
11.	Patient/Doctor Ratio	
12.	AMR	
13.	IMR	
14.	MMR	
15.	Literacy Rate	
16.	Global Acute Malnutrition (GAM) rate	
17.	Severe Acute Malnutrition (SAM) rate	
18.	Percentage of population having access to clean drinking water	
19.	Annual Crime	

Population

Total	Male (+18)	Female (+18)	Minor Male (-18)	Minor Female (-18)	Vulnerable People (PLWs, disabled, aged)

Source/Note: Click here to enter text.

Area (in acres)

Number of Dwelling Units	Kaccha (Mud/clay)	Pakka (Bricks & Morter)

Source/Note: Click here to enter text.

Total Area of District in Km2	Area under cultivation	Cultivation in Settled Area	Cultivation in Barid Area

Literacy Rate

Overall	Rural		Urban		Total	
	Male	Female	Male	Female	Male	Female

Source/Note: Click here to enter text.

Government Schools

		Schools	Enrollment
Boys	Primary		
	Middle		
	High		
Girls	Primary		
	Middle		
	High		
Co-Education	Primary		
	Middle		
	High		
Special Education			

Private Schools

		Schools	Enrollment
Boys	Primary		
	Middle		
	High		
Girls	Primary		
	Middle		
	High		
Co-Education	Primary		
	Middle		
	High		
Special Education			

Higher/Technical/Professional Education (Public & Private)

Particulars	College	Universities	Professional	Technical	Commerce	Total
No of Institution						
No of Students						

Source/Note: Click here to enter text.

Health Facilities

Particulars	Primary	Secondary	Tertiary	Private Hospital	Total
No. of Facilities					
Annual OPDs					
No of beds					
Doctors Available					
Paramedical staff					
Ambulances available					
Mobile Medical Units					

Livestock: Small Animals (goats, sheep etc.):

Big Animals (cows, buffalos, camel etc.):

Main source of livelihood of the community? (in percentage)

Agriculture	Livestock	Poultry	Fish Farming	Services (Public & Pvt)	Business	Expatriates	Industrial Labor	Skilled Labor	Unskilled Daily Labor	General Labor

Disaster History - Floods (since 1970)

S.No.	Year	No. of people affected	No. of deaths	No. of Revenue Estates affected	Houses Damaged (Partially)	Houses Damaged (Fully)	Compensation Paid (Rs.)	Financial Impact (including infrastructure damaged)
1								
2								
3								
4								
5								
6								
7								
8								
9								
10								
11								
12								

Disaster History – Other disasters (since 1970)

S.No.	Year	Disaster Type	No. of people affected	No. of deaths	Remarks
1					
2					
3					
4					
5					
6					
7					
8					
9					
10					

General Information

Particulars	Detail
Neighboring districts and their vulnerabilities	-----
Topographical Features	-----
Weather/Climate pattern	-----
Major Rivers	e.g. max. and min. temperature, annual precipitation, storms, heat waves, snow fall etc.
Major Nullahs / Streams	Name of river, passing through areas along with length in the district Major Barrages and their Flood levels
Motorway/Highway	Name of river, passing through areas along with length in the district
Railways	Flood levels
Geological features	Vulnerable points of motorway/highway

Dams (including small dams)

Name of Dam	Location	GPS Coordinates	Capacity	High Flood Level	Critical Points, if any	Remarks
		X: Y:				
		X: Y:				

Major Embankments/Bunds

Name of Embankment	Length (km)	Starting Point (Revenue Estate /Tehsil Name)	Ending Point (Revenue Estate /Tehsil Name)	Name of Critical /vulnerable Points	GPS Location of Critical/ Vulnerable Points	Remarks

Breaching Section

Name of Embankment	Name of Breaching Section	Location with GPS Coordinates	Likely Affected Population			Likely Affected Revenue Estate	Remarks
			Male	Female	Children		
		X: Y:					
		X: Y:					
		X: Y:					

Power Houses/Grid Station/Oil Depot/other sensitive installations

Name	Capacity	Location with GPS Coordinates	Name	Capacity	Location with GPS Coordinates
		X: Y:			X: Y:
		X: Y:			X: Y:

Airport / Landing Strips

Type	Area	Location with GPS Coordinates	Type	Area	Location with GPS Coordinates
		X: Y:			X: Y:
		X: Y:			X: Y:

Govt. storage facilities/warehouses in the district

Facility Type	Capacity	Location with GPS Coordinates	Facility Type	Capacity	Location with GPS Coordinates
		X: Y:			X: Y:
		X: Y:			X: Y:

District baseline/reference map



Coordination Organogram (including Sector lead agencies/ departments, Military, NGOs and Volunteers)



Source/Note:

Powers and functions of District Disaster Management Authority under NDM Act 2010:

The District Authority shall be as the district planning, coordinating and implementing body for disaster management and take all measures for the purposes of disaster management in the district in accordance with the guidelines laid down by the National Authority and the Provincial Authority.

Without prejudice to the generality of the foregoing provisions, the District Authority may:

- a) prepare a disaster management plan including district response plan for the district;
- b) coordinate and monitor the implementation of the National Policy, Provincial Policy, National plan, Provincial Plan and District Plan;
- c) ensure that the areas in the district vulnerable to disasters are identified and measures for the prevention of disasters and the mitigation of its effects are undertaken by the departments of the Government at the district level as well as by the local authorities;
- d) ensure that the guidelines for prevention, mitigation, preparedness and response measures as laid down by the National Authority and the Provincial Authority are followed by all departments of the Government at the district level and the local authorities in the district;
- e) give directions to different authorities at the district level and local authorities to take such other measures for the prevention or mitigation of disasters as may be necessary;
- f) lay down guidelines for preparation of disaster management plans by the departments of the Government at the districts level and local authorities in the district;
- g) monitor the implementation of disaster management plans prepared by the departments of the Government at the district level;
- h) lay down guidelines to be followed by the departments of the Government at the district level;
- i) organize and coordinate specialized training programmes for different levels of officers, employees and voluntary rescue workers in the district;
- j) facilitate community training and awareness programmes for prevention of disaster or mitigation with the support of local authorities, governmental and non-governmental organizations;
- k) set up, maintain, review and upgrade the mechanism for early warnings and dissemination of proper information to public;
- l) prepare, review and update district level response plan and guidelines;
- m) coordinate with, and give guidelines to, local authorities in the district to ensure that pre-disaster and post-disaster management activities in the district are carried out promptly and effectively;
- n) review development plans prepared by the departments of the Government at the district level, statutory authorities or local authorities with a view to make necessary provisions therein for prevention of disaster or mitigation;
- o) identify buildings and places which could, in the event of disaster situation be used as relief centres or camps and make arrangements for water supply and sanitation in such buildings or places;
- p) establish stockpiles of relief and rescue materials or ensure preparedness to make such materials available at a short notice;
- q) provide information to the Provincial Authority relating to different aspects of disaster management;
- r) encourage the involvement of non-governmental organizations and voluntary social-welfare institutions working at the grass root level in the district for disaster management.
- s) ensure communication systems are in order and disaster management drills are carried out periodically; and
- t) perform such other functions as the Provincial Government or Provincial Authority may assign to it or as it deems necessary for disaster management in the district.

District Plan:

- a) There shall be a plan for disaster management for every district of the Province.
- b) The District Plan shall be prepared by the District Authority having regard to the National Plan and the Provincial Plan.
- c) The District Plan shall be reviewed and updated annually.

Additional Powers of District Authority:

For the purpose of assisting, protecting or providing relief to the community, in response to any disaster, the District Authority may:

- a) give directions for the release and use of resources available with any department of the Government and the local authority in the district;
- b) control and restrict vehicular traffic to, from and within, the vulnerable or affected areas;
- c) control and restrict entry of any person into, his movement within and departure from, a vulnerable or affected area;
- d) remove debris, conduct search and carry out rescue operations;
- e) provide shelter, food, drinking water and essential provisions, healthcare and services;
- f) establish emergency communication system in the affected area;
- g) make arrangements for the disposal of the unclaimed dead bodies;
- h) direct any department of the Government of the Province or any authority or body under the Government at the district level to take such measures as are necessary in its opinion;
- i) require experts and consultants in the relevant fields to advise and assist as it may deem necessary;
- j) procure exclusive preferential use of amenities from any authority or person;
- k) construct temporary bridges or other necessary structures and demolish structures which may be hazardous to public or aggravate the effects of the disaster;
- l) ensure that the non-governmental organizations carry out their activities in an equitable and non-discriminatory manner; and
- m) take such other steps as may be required or warranted to be taken in such a situation.

Revenue Department (Functions and Responsibilities)

In case of any disaster or calamity the head of the revenue department in the district i.e. the DCO/DC should ensure that the following measures and steps have been taken:

- Taking everyone on board is perhaps the most important thing to do. Regular meetings of DDMA should be held to clearly highlight the roles and duties of DPOs, EDOs, XENs etc.
- Pre-flood meeting should be held and duties of all

concerned officers and departments should be clearly defined and assigned.

- A district disaster management plan should be prepared using the set template and update regarding any disaster or emergency that may strike the district.
- A focal person for the disaster or calamity should be nominated and his/her number should be communicated to all concerned departments.
- Proper stock taking should be done regarding available stocks of food and rations. Similarly stock regarding machinery and equipment should also be taken and inventories should be prepared. Out of order machinery should be repaired or replaced.
- Committees should be formed and constituted which will deal with various functions during a flood or emergency. Purchasing of food items, food, and machinery should all be done through committees.
- Identification of Low lying, medium and high vulnerability levels with flood level
- In case of evacuation the district administration should be very clear about the places where the relief camps or shelters will be established. Teams should be formulated which will look after these camps and will be in-charge for provision of tents, food, water and maintaining general law and order. Provision of cooked food is also to be ensured.
- Proper ware houses and stores should be made available for storing of aid and donated items that may be received from authorities such as PDMA, WFP etc. A committee should be constituted to look after the record of all the items in the store.
- Proper crop surveys or girdawaris should be conducted through the revenue officials so that crop damage assessment can be made after disaster or flood affects the district. These surveys will also help in determining the identity of the true owners as well.
- Post damage assessment should be carried out by joint teams constituted of patwaris, teachers, and agriculture field assistants. Technology should be involved and android sets should be used to gather accurate data.
- Round the clock active control rooms should be set up and the numbers be circulated to all concerned. The control rooms should be equipped with

wireless, telephones and computers. All info gathered or received should be conveyed to the concerned. The control room should have representatives of concerned departments such as police, health, 1122, and revenue.

- Early warning is critical in saving lives. The local revenue officials along with local police should be deployed to warn the people against the oncoming disaster and to urge them to vacate the disaster prone areas and villages. Loudspeakers, mosque speakers and word of mouth should be used. Banners and posters can also be used.
- Data collection is of prime importance and the senior network administrator should be declared as the focal person for collection of relevant information such as number of casualties, damages to infrastructure, injured, perished livestock etc. for onward submission to PDMA etc.
- Mock exercises should be carried out along with all concerned departments specially 1122, Police, civil defence and Pakistan army regarding the action plan during any emergency or flood. This will give a fair idea about the preparedness of the district.
- Availability of vehicles should be ensured for use during any emergency especially off road vehicles like jeeps.
- Suitable locations should be identified for accommodating armed forces like the Pakistan army. Normally schools, colleges or stadiums are allocated for the armed forces

Checklist for Revenue Department:

- Survey of entire District (Preparation of Village level information by Patwari)
- Identification of Low lying, medium and high: vulnerability levels with flood level
- Liaison of Patwari with Numberdars of their respective villages
- Contacts of all revenue staff posted near river belts and their output in flood prone areas
- List of Numberdars with their contacts, volunteer from low lying settlements with contact numbers
- Prepare list of vulnerable villages and make an estimate of likely affected population in such villages in the event of flood
- Name and contact numbers of private boat owners and operators Announcement of Flood Warning at

settlement level – Patwari responsible Forced evacuation with police

- Rapid assessment for relief goods and ration provision Coordination and reporting
- Carry out survey of entire flood affected areas to assess losses in collaboration with Agriculture, Livestock and Education Department
- Conduct crop damaged/ house damaged surveys

Tehsil / Municipal Committees

- Tehsil / Municipal Committees plays an important role of providing municipal services in the district including clean drinking water, sanitation facilities, maintenance of parks and removal of encroachment etc.
- Tehsil / Municipal Committees will provide assistance to the District Government for setting up and management of relief camps/ operations.
- Municipal Committees are responsible for provision & restoration of water and sanitation facilities in their municipalities besides disposal of waste or rain water/sewerage.
- Municipal Committees are equipped with trucks, water bowsers, tractors, dewatering sets, bulldozers, loaders and dump trucks. All of these equipment are utilized to restore proper sanitary facilities, ensure the delivery of clean water and remove debris or excess water.
- Municipal Committees sanitary workers can be employed for cleaning relief camps, or other such areas which has been affected by any disaster.
- Municipal Committees employ de-watering sets to remove excess water. All TMAs are required to ensure the maintenance of all dewatering sets prior to the monsoon season. The TMA maintains a list of all the choking points where rainy water accumulates as a result of heavy storms which can cause urban flooding.
- Municipal Committees should ensure supply of clean drinking in overhead reservoirs and ensure supply to the affected areas or relief camps through water bowsers. Clean drinking water is a major issue and requirement during any disaster.
- In case of any disaster that requires people to be relocated, the TMA under the concerned Administrator i.e ADC/AC will assist in the migration

- of the affected people.
- During the relief effort and subsequent rehabilitation effort the, the local TMAs manpower can be effectively used for the distribution of food and essential commodities among evacuated people or any other relief activity such as provision of cash compensation.

District Disaster Management Authority (DDMA)

- DDMA's are created under the NDM Act 2010 under Chapter IV Section 18 and the law defines their composition and also outlines their functions, duties and powers.
- District Disaster Management Authorities are the first line of defense and the implementing arm of the government policy and plans. Within the district there are three to four key players/departments that have to put up a joint and coordinated effort in order to fight with and handle any disaster under the leadership and coordination of the DCO. The office of the DCO fully supported by the DPO and line departments such as Health, Agriculture, Livestock, Civil Defence, 1122, TMAs and the Revenue Department form the main disaster management team within any given district. This plan is an effort to highlight their sets of responsibilities followed by the role of provincial departments.
- All district administrations had prepared a detailed contingency plan to face any disaster or hazard specially floods which until recently have become an annual affair for some districts.
- The district administration will divide the area as per district division with the Assistant Commissioner as in charge of his/her tehsil. All disaster related activities in a said tehsil will be coordinated through the concerned AC and the TMAs.
- On receipt of a flood warning, immediate warning will be conveyed to all the concerned officers. Immediate action will be taken in each sector / sub sector for evacuation of the population from risk prone areas to safer places or to Relief Camps. An Assistant Commissioner will ensure that announcements are made through loudspeakers of the mosques utilizing the services of the Revenue department. Each Patwari will inform the Numbardar, Headmaster of the School, Imam Masjid and councillors to make announcements etc.
- The tactical operations would be headed by the Additional District Collector (ADC). The ADC would be responsible for coordinating and supervising the disaster control and relief measures in the district.
- Composition of DDMA's for the year 2017 onwards will soon be notified.
- District Governments must establish a Disaster / Flood control room at the DCO's office, the numbers of which will be circulated to all concerned. The Disaster / Flood Control Room has to maintain updated information regarding the threat of disaster and statistics post disaster. The center will maintain a regular communication with the Flood Forecasting Division or the dam authorities upstream in case of a flood.
- The District Government would immediately mobilize the equipment needed to tackle the challenges created by a disaster. The District Governments will provide a comprehensive list of flood fighting equipment to PDMA as part of their flood contingency plans.
- Executive District Officer (Health) will ensure the availability of adequate medicines for treatment of common issues, particularly for snake and dog bite cases and general vaccines at each relief camp.
- EDO (Agriculture) and DO Livestock would arrange fodder and feed supplement for livestock and animals displaced.
- District Regional Transport Authorities (DRTA) in all 36 districts of Punjab are managed by Secretaries who would coordinate with local transporters to arrange for arranging transport required for evacuation of people from affected areas. In case of shortfall in transport in a particular district, the adjoining district would mobilize the transporters in his district to assist with the evacuation of people.

Role of Rescue 1122 in districts during disaster

- The immediate evacuation of people from the disaster prone and vulnerable areas.
- Provision of immediate medical aid during any emergency and at the same time transporting the injured or sick to the nearby hospital through their team of ambulances.
- In flood situations rescuing people from drowning in the strong currents is a specialty of 1122 as it has its own set of divers and boats. Similarly in case of

collapsed buildings or structures the 1122 is equipped with heavy machinery to cut through heavy debris.

- Apart from that responsible deployment of fire fighters, cordoning of hazardous areas, provision of first aid and medical treatment, immediate search and rescue of victims and management of the pre-hospital emergency system.
- Rescue 1122 is well trained in setting up medical camps for provision of emergency medical treatment. These camps are setup by Rescue 1122's doctors and paramedic staff.

Pre-disaster Check list for DDMA

- Meeting of DDMA held
- Identification of vulnerable areas
- Identification of Safe places
- Preparation of contingency plan
- Bunds and encroachments visited
- Sites identified for relief camps Evacuation routes/plan
- Safe custody of Government records and essential equipment and their shifting to safer areas on receipt of flood warning
- Enlistment of department wise available resources
- Preparation of list of required relief goods/ items
- Involvement of Volunteers, NGOs and other CSOs
- Designation of Focal Person
- Preparation of District vulnerability map with varying degrees of floods
- Evacuation well in time from vulnerable areas
- Establishment of Camps – All services under one roof
- Flood warning and weather forecast: Loudspeakers announcements
- Establishment of control rooms
- Cancellation of all type of leaves of all employees
- Designation of Focal Persons
- Assignment of duties and responsibilities of all officers for flood emergency
- Preparation of Telephone Directories with the cell numbers of all the members of DDMA's and volunteers
- No leave during flood days; No official will leave station

Checklist for Control Room:

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

Checklist for Relief Camp Incharge:

- List of staff displayed with name and department teams will work in shifts
- Presence of representatives of all service providers i.e. Health, livestock, Rescue 1122, Civil Defence etc.
- No movement without the permission of Centre Incharge
- Each shift in-charge to contact District Control Room on arrival and then on departure
- In-charge will keep close liaison with SHO of the respective area
- No of affectees in camp (sick, aged and children) shall be communicated daily
- Availability of at least one emergency vehicle at center be ensured
- Keep record of private boat owners and their contacts details
- List of Doctors and private hospital in the vicinity
- List and contact of philanthropists in the vicinity
- Keeping record of donations coming directly to Centre and report the same to Tehsil and District Incharge.
- Centre Incharge shall ensure vaccination of animals and humans against Communicable diseases
- List of missing persons must be displayed at all Relief Camps

Role of Health Department

The public sector health delivery system comprises of four tiers and as such will continue to provide services at these four tiers during and after any disaster:

Outreach and Community Based Activities, which focus on immunization, sanitation, malaria control, maternal and child health, and family planning. Primary care facilities include BHUs, RHCs. THQs and DHQs provide inpatient and outpatient care. Tertiary care hospitals located in the major cities for more specialized care.

In case of any disaster or calamity the health department will ensure that the following measures are in place;

- To provide first aid to the injured people and arrange evacuation of patients for further assistance.
- Medical camps and mobile health teams should be arranged for prevention and control of communicable diseases, immunization and provision of essential drugs.
- Health department would make a roster of all medical officers and paramedics that would be deployed to these camps and teams.
- Drugs and other medical equipment should be available at all these camps and with mobile teams. The medicine should be for relevant flood related issues, particularly Anti-snake venom, Anti-rabies.
- The shelters or relief camps established by the district administration should have medical centers with ambulances and special facilities for women and children.
- An emergency control room will be established in the office of Directorate General Health Services and a representative of this emergency control room would be designated to PDMA's control room.
- A list of essential medicines would be prepared by the Health department and it would ensure that medicines and other resources are present in sufficient stocks in hospitals in disaster hit areas.
- Medical colleges may be involved to create Emergency Response teams
- Health department would also coordinate with international organizations such as WHO and UNICEF.
- Extensive disease surveillances in the disaster hit areas should be carried out warnings if needed be issued through the Disease Early Warning System.
- Medical teams and paramedic staff should be mobilized and deployed for rapid assessment and quick response in the affected areas.
- A contingency plan will be prepared and submitted regarding preparedness for any disaster or calamity.
- The National Disaster Management Authority has designated WHO as the key organization that will fill the gaps in the supply of medicines, rapid diagnostic kits, and vaccinations etc.
- The department would employ female health workers in emergency areas specially, for spreading

awareness regarding health risks in a disaster and for any vaccination or immunization programme that may be needed during any emergency.

- A Health and Nutrition Cluster for overall management and oversight of Health department's disaster response would be formed at the Directorate General Health office.
- In case the medicine stocks or even the infrastructure is damaged due to floods, the department would draw up a plan for early recovery of health infrastructure and service delivery.

Civil-Military Coordination Mechanism

Volunteer Network

E.g. how many registered volunteers, how to activate them, who will coordinate with them etc

RISK ANALYSIS

1. Potential hazards of the district

Hazards	Likelihood (Score 5)	Impact (Score 5)	Risk
Floods			
Urban Flooding			
Flash Floods			
Hill Torrent			
Glacial Lake Outburst Flood (GLOF)			
Landslide			
Tornado			
Earthquake			
Drought			
Epidemic			
Fire Incidents			
Other Major Accidents (Building Collapse, road traffic accidents, train accident, Stampede, plane crash)			
Environmental Hazards (industrial accidents, severe pollution etc.)			

Risk= Impact x Likelihood

Low	:	1-7
Medium	:	8-14
High	:	15-25

2. Hazards

- Disasters occurred over the past two to three decades and their impact on communities and development sectors.
- Provide a brief description of the hazards being planned for (medium and high risks), including potential location that could be affected;
- Briefly outline the triggers

District detail map with vulnerable points, hazards, planned camps, health facilities, warehouses etc.



Source:

3. Response & Operational Capacity

Briefly describe the existing response capacities in District (including government and NGO part

4. Strategic Reserves

Items	Available	Functional	Non-Functional	Extra Demand
Boats				
OBM				
Dewatering sets				
Navigators				
GIS devices				
Life Jackets				
Life Ring				
Life Lines				
Scuba diving suit with complete accessories				
First Aid Kits				
Rescue Bag				
Safety Harnesses				
Ambulances				
Fire Brigade				
Water Tanks / Bouzers				
Extendable Ladders				
Hydraulic Cutter				
Sonar Rader				
Jumping Sheet				
Dumpers				
Excavators				
Cranes				
Bulldozer				
Boat Carrier/Trolleys				
Pickups/Jeeps/4x4 vehicles/Mini Trucks				
Searchlight				
Tent				
Mosquito Net				
Plastic Mat				
Blanket				
Any other main relief/rescue equipment				
Generator Sets				
GasCutters				
Sonar Radars				
Scuba Diving Set				
Navigator/GPS Tracker				
Hydraulic Cutter				
Floating Rope				

5. Gaps and Constraints

- Briefly outline the capacity gaps in the provision of rescue and response;
- Describe major obstacles to providing humanitarian assistance (security, access constraints, administrative obstacles, logistics, etc.)

MITIGATION STRATEGY

- ✓ Briefly describe what measure could be taken to reduce the impact of the potential disasters.
- ✓ Strategic repositioning of available relief stocks
- ✓ Public education and community awareness

Hazards	Mitigate Actions	Responsible Department
Floods		
Urban Flooding		
Flash Floods		
Hill Torrent		
Glacial Lake Outburst Flood (GLOF)		
Landslide		
Tornado		
Earthquake		
Drought		
Epidemic		
Fire Incidents		
Other Major Accidents (Building Collapse, road traffic accidents, train accident, Stampede, plane crash)		

Environmental
Hazards
(industrial
accidents, severe
pollution etc.)

RESCUE STRATEGY

- What actions will be taken as an immediate response to the situation? E.g. Evacuation, medical assistance
- Whodoes what and when? Responsible departments/agencies
- How and when Pakistan Army will be requested to support the rescue activities
- Camp sites identified? List at Annex I.

HUMANITARIAN ASSISTANCE

- How damage and losses data will be collected and communicated to higher level?
- How the priority needs (e.g. food, shelter, health etc.) will be determined?
- What activities will be carried -out to provide assistance to the affected population and by whom?
- What assistance will be provided?
- Standardization of different packages/kits e.g. food, tents
- Humanitarian Assistance monitoring mechanism –to avoid duplication and identify gaps
- Minimum standards for camps, if camps are established
- What is the current capacity in the district? Enough for how much caseload?
- Explain how protection, gender and age, environment and other relevant cross -cutting issues that will be addressed or mainstreamed into the humanitarian assistance strategy

ANNEX I: IDENTIFIED SITES FOR DISPLACED PERSONS

S#	Location	which can be accommodated	GPS Coordinates	S#	Location	which can be accommodated	GPS Coordinates
			X: Y:				X: Y:
			X: Y:				X: Y:

ANNEX II: LIST OF HAZARD PRONE VILLAGES/REVENUE ESTATE (NAMES REQUIRED)

Hazards	Tehsils	UCs	Names of Revenue Estates	Names of Villages
Floods				
Urban Flooding				
Flash Floods				
Hill Torrent				
Tornado				
Earthquake				
Drought				
Epidemic				
Environmental Hazards (industrial accidents, severe pollution etc.)				

ANNEX III: LIST OF HEALTH FACILITIES AND THEIR VULNERABILITY TO HAZARDS

S#	Name and Location	GPS Coordinate	Health Facility Type (Primary, Secondary, Tertiary)	Name and Contact No of Focal Person	Hazard Vulnerability (Flood, Earthquake etc.)
1		X: Y:			
2		X: Y:			

ANNEX IV: LIST OF VULNERABLE EDUCATIONAL INSTITUTIONS

S#	Name	Institute type (School, College etc)	GPS Coordinate	Enrolment	Incharge Name	Contact Number
1			X: Y:			

ANNEX V: LIST OF INDUSTRIES WITH THEIR RISK LEVEL

S#	Industry Name	Location	GPS Coordinate	Risk Type (Chemical, Biological, Radiological, Nuclear)	Name and Contact of Focal Person	Risk Level (low, medium, high)	Prone to Hazard? Fire/Floods/Earthquake
1			X: Y:				
2			X: Y:				

ANNEX VI: LIST OF NGO WORKING IN THE DISTRICT

S#	NGO Name	NGO Type (Local, National, International)	Location where they are working	Sector/Cluster of work e.g. WASH, Health, Education	Focal Person Name	Contact No.
1						
2						

ANNEX VII: CONTACT LIST OF MAIN STAKEHOLDERS/DEPARTMENTS

S#	Designation	Person Name	Telephone (Office)	Telephone (Residential)	Mobile
1	Focal Person for Disaster				
2	Commissioner				
3	RPO				
4	DC				
5	DPO				

ANNEX VIII: LIST OF VOLUNTEERS

S#	Volunteer Name	CNIC	Address	Contact Number and Email	Blood Group	Time Required to be onboard
1						
2						

ANNEX IX: POLITICAL CONSTITUENCIES

National Constituencies				Provincial Constituencies			
Name of constituency	Name of Sitting Parliamentarian	Portfolio	Contact Number	Name of constituency	Name of Sitting Parliamentarian	Portfolio	Contact Number

ANNEX X: LOCAL GOVERNMENT

District and Tehsil Level

S#	Designation	District Name	Tehsil Name	Name	Contact Number	Mobile Number
1	Mayor Metropolitan Municipal Committee					
2	Chairman District Council					

ANNEX XI: DATA COLLECTION PERFORMAS

P1: House Damage Assessment

District: _____

Date: _____

S#	Name	Father Name	CNIC	Address	Revenue Estate	Union Council	Tehsil	Partially/Completely	Katcha/Pakka	%age of Damage	Contact No.	GPS Coordinates	Picture Taken (Y/N)

P2: Deceased Person Reporting Form

District: _____

Date: _____

S#
Name of deceased
Father's name
Address
Domicile
Gender
Age
CNIC
Cause of death
Date of death
Place of death
Marital status
Next of kin's Name and Contact and CNIC etc.)
Verifying Officer (Name, Designation and Contact)
Compensation Paid or not

P3: Injured Person Reporting Performance

District: _____

Date: _____

S#
Name of injured
Father's name
Address
Domicile
Gender
Age
CNIC
Cause of injury
Date of injury
Injury Type (Permanent or Temporary)
Compensation Paid or not

P4: Cattle Head Perished

District: _____

Date: _____

S#
Name of Farmer
Father Name
CNIC
Mauza
Tehsil
Type of Animals
Number of Animals (Cow, sheep etc.)
Vaccinated/Unvaccinated
Witness 1 name and contact No.
Witness 2 Name and Contact No.

P5: Crop Damages

District: _____

Date: _____

S#
Tehsil
Qanoongoi
Union Council
Mauza
Farmer Name
Land owner/Tenant
CNIC of farmer
Contact number
Type of Crops
Total land affected (acres)
% of mauza affected

P6: Relief Distribution Tracking Performa

District: _____

Date: _____

S#	Location/ Destination	Arrival Date and time	Items	Quantity	Items short (if any)	Items sent by	Driver name	Receiver	Bilty no
----	--------------------------	--------------------------	-------	----------	-------------------------	---------------	-------------	----------	----------

P7: Private Machinery (Boats, Bulldozers, cranes etc.)

In case of a mega disaster that overwhelms the resources of the Government in certain area, the equipment of private owners are engaged to continue with evacuation, rescue or relief services. The following template is filled to maintain a record of boat owners that might be engaged at the time of a disaster.

District: _____

Date: _____

S#	Name of boat owner	Father name	Contact Number	Age	CNIC	Location of boat/Machinery	Type of Machinery (Boat, Bulldozers, Cranes etc.)	Engine type	Boat capacity	Equipment Condition	Number of Machinery
----	-----------------------	-------------	----------------	-----	------	-------------------------------	---	-------------	---------------	------------------------	------------------------

P8: Relief camp registration Performa

New entrants in the relief camps should be documented on a weekly basis by utilizing the following template:

District: _____

Date: _____

S#	Nationality	Domicile	Male	Female	Age	Children Under 12	Infants under 3	Sick	Injured	Pregnant
----	-------------	----------	------	--------	-----	-------------------	-----------------	------	---------	----------

P9: NGO registration performa

All the Non-Governmental Organizations operating in the disaster affected areas should register themselves at PDMA's website. The following template has been developed for NGOs assisting the Government in disaster response.

District: _____

Date: _____

S#	Name of NGO	Local /INGO	Relief activity	Relief camp if any	Focal person in the district	Registered with PDMA	Foreigners to be visiting or not.
----	-------------	-------------	-----------------	--------------------	------------------------------	----------------------	-----------------------------------

P10: Control Room

PDMA requires all districts to setup a control room at the incidence of a disaster. This control room would plan and execute a well-knit Governmental disaster response by bringing together all representatives of the various Governmental departments. This control room would be operational around the clock. District must be informed about its operation and in charge by filling the following template:

District: _____ Focal Person: _____ Date: _____

S#	Location of control room	Shift I Incharge Name and Contact	Shift II Incharge Name and Contact	Shift III Incharge Name and Contact	Phone Numbers	Fax Numbers	E Mail Address
----	--------------------------	-----------------------------------	------------------------------------	-------------------------------------	---------------	-------------	----------------

ANNEX XII: CAMP MANAGEMENT SOPs

- Camps would be established in areas accessible by metalled roads so that provision of essential facilities is not difficult
- Basic facilities such as food, clean drinking water, health, hygiene and sanitation should be available at these shelters.
- Proper registration mechanism should be in place to differentiate between those actually affected and cunning opportunists
- Proper security system should be in place in coordination with the local police as the presence of police always acts as deterrence for criminals who may be attracted to such places.
- Emergency medical care should be available as well as a firefighting system as fire outbreaks are common in such tents
- Proper camp management should be announced and notified and there should be a complaint cell as well
- A proper distribution mechanism should be in place to ensure that the needy get what they need

- Scattered camps should be catered for and encouraged to join the main camp.
- At times shallow hand pumps are not safe for drinking as the water underground has been affected. In such cases clean medicated water should be provided through water ~~bowse~~
- Vector control is an essential part of the camp management and steps should be taken to remove rats, snakes and mosquitoes etc.
- Un-accompanied and missing children shall be placed separately with proper care and fulfilment of their physical and psychosocial needs.
- Needs of women as per local and cultural environment shall be considered for establishing separate relief camps for ladies with provision of proper security and light arrangements.

Land	3.0-4.5 square meter per person
Shelter	3.5 squaremeter per person
Water	15-20 liters per person per day
Food	2100 kcal per person per day
Toilet	One per family of 40 persons
Health Centre	One per 20,000 persons
Child Friendly Spaces	2-4 year olds 15 children:2 facilitators
	5-9 year olds 20 children : 2 facilitators
	10-18 year olds 30 children :2 facilitators
Hospital	One for as many as 200,000 persons

ANNEXURE 2

DEPUTY COMMISSIONERS IN THE PUNJAB

SR.No	Designation	Name/ Address	Telephone Office	Tele.Residence	Fax.No
1	D.C Bahawalpur Code - 062	Muhammad Saleem Afzal	9250492-3 9250069	9250063-4 0341-0922083	9250493 9250064 R
2	D.C Bahawalnagar Code-063	Mr. Azhar Hayat	9240202	9240201 0304-0920084	9240204
3	D.C Rahim Yar Khan Code-068	Suqrat Aman Rana dcorykhan@punjab.gov.pk	9230266 9230233	9230277-78 0304-0920085	9230267
4	D.C Dera Ghazi Khan Code-064	Mr. Allah Rakha Anjum	9260340-43	9260342 0304-0920090	9260349 9260113
5	D.C Layyah Code-0606	Mr. Wajid Ali Shah dcolayyah@punjab.gov.pk	920103-4	413705 0304-0920092	920102
6	D.C Muzaffargarh Code-066	Muhammad Saif Anwar Jaapa dcmuzaffargarh@gmail.com	9200251-52	9200254 0304-0920091	9200253
7	D.C Rajanpur Code-0604	Mr. Ishfaq Ahmed Ch. dcorajanpur@gmail.com	689131 688495	689002 0304-0920093	688492
8	D.C Faisalabad Code-041	Mr. Salman Ghani dcfaisalabad@punjabgov.pk	9200205 9200206	9200208-9 0304-0920078	9200156
9	D.C Chiniot Code-047	Muhammad Ayub Khan dcochiniot@punjab.gov.pk	9210111 9210101	9210105-6 0304-0920089 0300-7893290	9210110 9210109
10	D.C Jhang Code-047	Mr. Mudassar Riaz Malik dcojhang@punjab.gov.pk	9200081-106	900200-1 0304-0920080	9200100
11	D.C T.T Singh Code-046	Mr. Mozazam Iqbal Sipra dcottsing@punjab.gov.pk snattsingh@punjab.gov.pk	9201001	2510659 0304-0920079	9201004
12	D.C Gujranwala Code-055	Mr. Amir Jan	9200051-52	9200024-25 0304-0920064	9200043
13	D.C Gujrat Code-053	Muhammad Ali Randhawa dcogujrat@punjab.gov.pk	9260010-100 9260066	9260011 0304-0920066	9260009 9260014
14	D.C Hafizabad Code-0547	Mr. Allah Ditta Warriach	521784	521075 0304-0920069	521075 521784
15	D.C Mandi Bahauddin Code- 0546	Hafiz Shaukat Ali dcombdin@punjab.gov.pk	504220	504200 0304-0920068	504100 500987
16	D.C Narowal Code- 0542	Mr.Rifat Ali dconwl@punjab.gov.pk	920010 920020	92121-2 0304-0920067	920013
17	D.C Sialkot Code- 052	Dr. Asif Tufail	9250451-2	9250454-5 0304-0920065	9250453
18	D.C Lahore Code-042	Mr. Sumair Ahmed Syed	99211003-4 0304-0920060	99200201-2 0345-8447950	Fax.NSV'o

DEPUTY COMMISSIONERS IN THE PUNJAB

SR.No	Designation	Name/ Address	Telephone Office	Tele.Residence	Fax.No
19	D.C Kasur Code- 049	Ammara Khan	9250067 9250143	250140 0304-0920062	99211006
20	D.C Nankana Sahib Code- 056	Saira Umar dconankana@punjab.gov.pk	920110-11	9201014 0322-8887859	9250162
21	D.C Sheikhpura Code-056	Mr. Arqam Tariq dcosheikhpura@gmail.com	9200150-2	9200153-4 0304-0920061	9201015
22	D.C Multan Code-061	Mr. Nadir Chattaha dco.multan.it@gmail.com	9200042-43	9200045-724 0304-0920081	9200152
23	D.C Khanewal Code- 065	Mr. Muzaffar Khan Sial dcokhanewal@gmail.com	9200032-3	9200031-5 0304-090082	9200724
24	D.C Lodhran Code- 0608	Raja Khuram Shahzad dcolodhran@gmail.com	9200066 9200100	9200200 0304-0920088	9200033
25	D.C Vehari Code- 067	Mr. Ali Akbar Bhatti dcovehari@punjab.gov.pk	3362122 3363488	3363477-78 0304-0920094	9200077
26	D.C Rawalpindi Code- 051	Mr. Talat Mehmood Gondal dcpindi@gmail.com	9292530	9292732-33 0304-0920070	3363688 3363478 *
27	D.C Attock Code- 057	Rana Akbar Hayat	9316011 9316010	0304-0920072	9292529
28	D.C Chakwal Code- 0543	Dr. Omer Jahangir dco.chakwal@gmail.com	660001 660101	660100 0304-0920073	9316011
29	D.C Jhelum Code- 0544	Mr. Iqbal Hussain Khan dco.jhelum@gmail.com	9270081	9270082 0304-0920071	660106 660250
30	D.C Sahiwal Code- 040	Mr. Shaukat Ali Khichi DCOsahiwal@gmail.com	9200060-61	9200064 0304-0920086	9270086
31	D.C Okara Code- 044	Saima Ahad	9200025 9200026	0341-0920063	9200062
32	D.C Pakpattan Code- 0457	Mr. Irfan Ahmed Sandhu	374198 373033	371021 0304-0920087	9200032
33	D.C Sargodha Code- 048	Mr. Liaqat Ali Chattha	9230025-26	9230046 0304-0920074	371035
34	D.C Bhakkar Code- 0453	Syed Bilal Haider dcobhakkar@punjab.gov.pk	9200188 9200288	9200388 0304-0920077	9230024
35	D.C Khushab Code- 0454	Mr. Amjad Bashir dcokhushab@punjab.gov.pk	920202 720626	720470 0304-0920075	9200160-1
36	D.C Mianwali Code- 0459	Mr. Shozeb Saeed dcomianwali@gmail.com	234300	232555 0304-0920076	920204 234895

LIST OF ADDITIONAL DISTRICT COLLECTOR

SR.No	Name	District	Office No.	Cell No	Fax No
1	Mr. Ikram-ul-Haq	Attock	057-9316013	0312-5204289	057-9316022
2	Mr. Tariq Mehmood Bukhari	Bahawalnagar	063-9240209	0333-6489999	063-9240210
3	Imrana Ajmal	Bahawaplur	062-9250046	0323-6502114	062-9250041
4	Hafiz Ahmed Tariq	Bhakkar	0453-9200396	0332-4561399	0453-9200398
5	Muhammad Asim Javed	Chakwal	0543-660102	0300-4229255	0543-660250
6	Mr. Sana Ullah	Chiniot	047-6332338	0300-4640021	047-9210097
7	Mr. Abdul Shakoor	D.G Khan	064-9260334	0333-8569248	
8	Mr. Khawar Ijaz Khaliq	Faisalabad	041-9200306	0333-7373737	041-9200298
9	Mr. Tariq Qureshi	Gujranwala	055-9200034	0340-0002951	055-9200039
10	Mr. Irfan Ali Khatia	Gujrat	053-9260061		053-9260062
11	Mr. Munawar Hafeez	Hafizabad	0547-524338	0333-8158387	0547-526171
12	Mr. Abdul Qadir Shah	Jhang	047-9200107-110	0300-5900722	
13	Mr. Imran Raza Abbasi	Jhelum	0544-9270102	0333-4146777	0544-9270371
14	Muhammad Shahid Khan	Kasur	049-9250099	0300-5819570	
15	Mr. Ishfaq Ahmed Ch.	Khanewal	065-9200069	0300-8780143	065-9200033
16	Rao Atif Raza	Khushab	0454-920120	0300-6048343	0454-920218
17	Mr. Irfan Nawaz Memon	Lahore	042-99210614-15	0345-4014701	042-99210632
18	Dr. Lubna Nazir	Layyah	0606-920107	0300-4989307	0606-920102
19	Dr. Javed Ahmed	Lodhran	0608-9200120	0300-6461115	0608-9200121
20	Mr. Afzal Ahmed Warraich	M.B Din	0546-506488	0300-7239250	0546-504100
21	Mr. Ghulam Mustafa	Mianwali	0459-235005	0300-9460973	0459-234895
22	Mr. Manzar Javed Ali	Multan	061-9200073	0334-9998877	061-9200976
23	Mr. Ijaz Munir	Muzaffargarh	066-9200264	0300-6550400	066-9200259
24	Mr. Tariq Kareem Khokhar	Narowal	0542-920063	0300-4914911	
25	Dr. Shahzeb Hasnain	Nankana Sahib	056-9201080	0333-4591013	056-2877061
26	Muhammad Riaz	Okara	044-9200251	0300-9348113	044-9200248
27	Mr. Arif Umar Aziz	Pakpattan	0457-352725	0333-8013524	0457-371279
28	Mr. Shozeb Saeed	R.Y Khan	068-9230226	0300-8670463	068-9230331
29	Mr. Abdul Fateh Halio	Rajanpur	0604-689282	0344-2710274	0604-689288
30	Mr. Arif Raheem	Rawalpindi	051-9292528	0300-8482212	051-9292527
31	Mr. Kashif Muhammad Ali	Sahiwal	040-9200078	0300-6301838	040-9200076
32	Mr. Farooq Rasheed Sindhu	Sargodha	048-9230255-56	0300-9440106	
33	Mr. Rao Riaz Ijaz	Sheikhupura	056-9200163	0345-9262101	056-9200164
34	Muhammad Umer Sher	Sialkot	052-9250466	0333-4573308	
35	Mr. Zeshan Shabbir Rana	T.T Singh	046-9201011	0300-8525277	
36	Rana Saleem Ahmed	Vehari	067-3364063	0301-8683222	067-3363514

ANNEXURE 3

**PUNJAB EMERGENCY SERVICES (RESCUE 1122)
DISTRICTS EMERGENCY OFFICERS NUMBERS**

SR.No	NAME	DISTRICT	CELL NO.
1	Dr. Ashfaq Mian	Attock	0300-5124877
2	Engr. Rao Sharafat Ali	Bahawalnagar	0302-4219300
3	Mr. Asif Raheem	Bahawalpur	0321-6807001
4	Engr. Naveed Iqbal	Bhakkar	0300-4434543
5	Mr. Abdul-Mutlib	Chakwal	0300-6561122
6	Tahira Khan	Chiniot	0300-4179020
7	Dr. Muhammad Natiq Hayat	D.G Khan	0333-6475473
8	Engr. Ehtisham	Faisalabad	0333-8881122
9	Engr. Omar Akbar Ali Ghuman	Gujranwala	(03336517115)(03059911224)
10	Hafiz Abd-ur-Rasheed	Gujrat	0300-5698489
11	Engr. Sibghat Ullah	Hafizabad	0333-4175110
12	Engr. Ali Hussain	Jhang	0321-8666993
13	Dr. Faisal Mehmood	Jhelum	0345-0313-7308299
14	Dr. Farzand Ali	Kasur	0300-4355396
15	Dr. Muhammad Ijaz Anjum	Khanewal	0333-7621122
16	Dr. Muhammad Nayyar Alam	Khushab	0331-8627686
17	Dr. Ahmad Raza	Lahore	0332-4441122
18	Dr. Muhammad Tasleem	Layyah	(03216760007)(0300-4300693)
19	Dr. Syed Majid Ahmad	Lodhran	0321-6807524
20	Mr. Kamran Rasheed	Muree	0333-7121122
21	Engr. Imran Khan	M.B Din	(03215141122)(03225444467)
22	Dr. Sajjad Ahmad	Mianwali	0334-6908349
23	Dr. Kaleem Ullah	Multan	0323-4018426
24	Dr. Irshad Ul Haq	Muzaffargarh	(03216871122)(03334238012)
25	Engr. Adnan Nawaz	Narowal	0333-8646254
26	Dr. Muhammad Akram	Nankana Sahib	0333-8641122
27	Dr. Zafar Iqbal	Okara	0333-4044279
28	Dr. Tahir Mehmood	Pakpattan	0344-6730994
29	Dr. Abdul Sattar	R.Y Khan	0332-4321122
30	Dr. Muhammad Aslam	Rajanpur	0333-7627166
31	Dr. Abdul Rahman	Rawalpindi	0333-4471122
32	Dr. Khalid Abdullah	Sahiwal	0300-9443288
33	Mr. Mazhar Shah	Sargodha	(03337861122)(03334461122)
34	Mr. Rana Ijaz Ahmed	Sheikhupura	0336-4441122
35	Syed Kamal Abid	Sialkot	0301-8616077
36	Engr. Mian Faraz Munir	T.T Singh	0331-7771122
37	Dr. Abid Hussain	Vehari	0322-7151155

ANNEXURE 4

RAINFALL (MM) STATEMENT FOR THE MONTH OF JULY-2016

SR.No	PUNJAB	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1	B.NAGAR	0	0	4	0.1	0	0	0	0	6	0	0	0	0	0	0
2	B.PUR, CITY	0	0	34	0	0	0	0	0	0	0	0	0	0	0	0
3	B.PUR, A/P	0	0	13	0	0	0	0	0	0	0	0	0	0	0	0
4	BHAKKAR	0	0	26	1	0	13	0	0	5	0	0	0.1	6	0	0
5	CHAKWAL	0	0	19	0	0	6	0	0	0	0	0	4.8	13.2	8	0
6	D.G.KHAN	0	0	0.1	0	0	0	0	0	0	23	0	0	0	0	0
7	FAISALABAD	0	0	0	0	0	1	25.4	0	5	11.2	0	0	0	0	0
8	ISB,A/P	0	8	3	44	0	28	1	0	8	0	0	0	0.1	32	39
9	ISB,Z/P	0	0	14	20	0	24	0.1	0	2	0	0	0	0	23	75.4
10	ISB, S.Pur	0	0	32	5	0	10	0	0	0	0	0	0	0	21	55
11	ISB,S.ABAD	0	0	37	14	0	24	0	0	4	0	0	0	0	17	59
12	ISB, GOLRA	0	0	28	3	0	12	0	0	2	0	0	0	0	25	32
13	ISB,BOKRA	0	2	16	7	0	16	0	0	19	0	0	0	0	6	44
14	JHANG	0	0	3	0	0	39	0	0	34	9	0	0	0	0	0
15	JOHARABAD	0	0	1	0.1	0	0	0.4	0	9	1	0	0	0	0	0
16	JHELUM	0	0.1	20	0	0	30	0	0	0	0	0	0	0	0	71.4
17	KASUR	0	0	34	0	0	0.1	0.1	0	0	29	0	18	0.1	0	0
18	KHANPUR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
19	KOT ADDU	0	0	6	0	0	0	0	0	0	7.2	0	0	0.1	0	0
20	KAMRA	0	0	60	0.1	0	0.1	0.1	0.1	0.1	0	0	0	0	2	7
21	LAHORE, A/P	0	0.1	3	0	0	32	1	0.1	4	9	0	0	0	0	8.2
22	LAHORE, PBO	0	0	8	0	0	19	4.3	1	4	7.2	0	21.6	0	0	0.1
23	SHAHI,QILLA	0	0	1	0	0	34	0.1	0	8	4	0	0	0	0	18
24	MISRI SHAH	0	0	1	0	0	31	0.1	0	6	5	0	0	0	0	26
25	UPPER.MALL	0	0	1	0	0	20	0.1	0	3	5	0	0	0	0	0
26	SHAH DARA	0	0	0.1	0	0	28	0.1	0	0	12	0	0	0	0	0
27	GULBERG	0	0	2	0	0	38	0.1	0	5	4	0	25	0	0	9
28	LUCKSHAMI	0	0	3	0	0	25	0.1	0	8	6	0	0	0	0	30
29	GULSHAN RAVI	0	0	17	0	0	19	0.1	0	3	15	0	0	0	0	0
30	IQBAL TOWN	0	0	1	0	0	10	0.1	0	2	13	0	0	0	0	0
31	SAMNABAD	0	0	1	0	0	13	0.1	0	2	10	0	0	0	0	0
32	JOHAR TOWN	0	0	4	0	0	44	0.1	0	0	16	0	0	0	0	0
33	TOWNSHIP	0	0	5	0	0	11	0.1	0	0	9	0	0	0	0	8
34	MUGAL PURA	0	0	2	0	0	22	0.1	0	2	4	0	0	0	0	0
35	TAJPURA	0	0	2	0	0	22	0.1	0	3	2	0	0	0	0	0
36	LAYYAH	0	0	14	0	0	18	0	0	0.1	0	0	0	0	0	0
37	M.B.DIN	0	0.1	35	0.1	0	6	14	0	27	12	0	0	0	0	30
38	MIANWALI	0	0	90	0.1	0.1	0.1	5	0	0	0	0	0	0	0	6
39	MULTAN	0	0	34	0	0	0	0	0	0	0.1	0	1.6	2.4	0	0
40	MANGLA	0	0	3	0	0	25	0.5	0	0.1	11	0.1	0	0	8	48
41	MURREE	0	16	4	7	1	4	25	0	33	5.4	15.4	6.6	7	1	11
42	N.P.THAL	0	0	0	0	0	2	3	9	69	0	0	0	0	0	0
43	OKARA	0	0	0.1	0	0	2	0	0	0	32	0	0	0	0	0
44	R.Y. KHAN	0	0	0	0	0	0	0	0	0	0.1	0	0	0	0	0
45	GUJRANWALA	0	64	3	0	0	25	1.4	0	0	7.4	0	0	0	0	39.3
46	GUJRAT	0	18	0.1	0	0.1	1	0	0	0	4	0.1	0	0	0	7
47	SAHIWAL	0	0	0.1	0	0	1	2	2	0	3	0	0	0	0	0
48	SARGODHA A/P	0	0	2	0	0	0.1	3	0	12	0	0	7	5	0	0
49	SARGODHA CITY	0	0	0.1	0	0	0	0	0	7	0	0	12	10	0	0
50	SHORKOT	0	0	33	0	0	39	0	0	0	0.1	0	0	0	0	0
51	SIALKOT CANTT	0	85	3	0	0	11	0.1	0	0	1	0	0.1	0	0	70.4
52	SIALKOT A/P	0	116	0.1	0	0	3	0	0	0.1	5.6	0	0	7.2	0	46.2
53	T.T. SINGH	0	0	0	0	0	34	0.1	0	19	3.6	0	0	0	0	0

RAINFALL (MM) STATEMENT FOR THE MONTH OF JULY-2016

16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
0	0	1	3	0	0	0	0	0	0	0	0	0	0	0	14.1
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.1	34.1
0	0	0	3	0	0	0	0	0	0	0	0	0	0	0.1	16.1
1	42	11	0	0	0	0	0	0	0	0	2	0	0	1	108.1
15	0.1	47	0	0	0	0	0.1	0.2	0	43	5.3	0.6	6.2	11.2	179.7
0	0	0.1	0.1	0	0	0	0.1	0	0	0	2.1	1	0	0	26.5
0	0.1	25	0	0	0	0	0	0	0	0	36.5	0	0	0	109.2
19	8	29	0.1	0.1	0	19	3	1	0.1	69	19	0	26	0	358.4
16	0.1	5	0.1	0	0	29	0.1	5	0.1	56	18	0	24	0	341.9
4	18	3	0	0	0	51	3	8	1	23	10	0	23	0	307.0
30	4	12	0	0	0	29	0	1	0	58	25	0	30	0	353.0
27	18	5	0	0	0	8	0	0	0	69	25	0	17	0	286.0
37	13	15	0	0	0	9	0	0	0	35	24	0	20	0	264.0
1	71	5	0	0	0	0	0	0	0	0	0	0	0	1.6	163.6
30	4	8	0	0	0	0	3	0	0	0	2	0	17	6	81.5
4	0	0	0	0	0	1	0	17	12	0	8	0	19	7.6	192.1
0	33	1	0.1	0	0	0	0	0	0.1	0	2	0	0.1	0.1	117.7
0	0	0	2	0	0	0	0	0	0	1	0.1	0	0	0	3.1
0	0	0.1	0	0	0	0	0	0	0	0	26	0	0	0	39.4
18	0.1	27	0	0	0	0	40	0	0.1	69	0.1	0	27	33	294.8
2	40.6	0.1	0	0	0	3	7	0	29	0	20	0	0	5	164.2
0.1	33.7	0	0	0	0	0	0	0	2.2	0	20.1	0	0	3.8	150.9
0	47	0	0	0	0	0	0	0	2	0	62	0	0	0	187.1
0	52	0	0	0	0	0	0	0	10	0	77	0	0	0	228.1
0	28	0	0	0	0	0	0	0	3	0	31	0	0	25	134.1
0	38	5	0	0	0	0	0	0	0.1	0	2	0	0	0	93.3
0	33	2	0	0	0	0	0	0	4	0	37	0	0	1	182.1
0	39	2	0	0	0	0	0	0	2	0	63	0	0	0	197.1
0	35	0	0	0	0	0	0	0	0	0	2	0	0	0	131.1
0	45	0	0	0	0	0	0	0	0	0	16	0	0	0	130.1
0	45	0	0	0	0	0	0	0	0	0	11	0	0	0	124.1
0	61	0	0	0	0	0	0	0	0	0	18	0	0	0	195.1
0	50	0	0	0	0	0	0	0	0	0	18	0	0	0	151.1
0	30	0	0	0	0	0	0	0	5	0	57	0	0	33	155.2
0	30	0	0	0	0	0	0	0	20	0	27	0	0	25	131.2
0	20	0	0	0	0	0	0	0	0	0	33	0	0	0.5	85.6
0	0	5	0	0	0	0	0	0	1	40	25	0	0	31	232.2
3	0	29	0	0	0	0	0.1	0	0	0.1	1	0	55	18	207.5
0	0	0.1	0	0	0	0	0	0	0	0	14.4	0	0	0	52.6
16	0.3	1	0.1	0	0	7	2.6	6	2	66	8	0	32	4.4	241.2
1	0	21	1	0	0	18	0	10.1	46.1	42	14.6	0	4	0	302.2
0	116	10	0	0	0	0	0.1	0	0	0	0	0	0	8	217.1
0	23	75	14	0	0	0	0.1	0	0	0	0.1	0	0	0	146.3
0	0	0	0.1	0	0	0	0	0	0	0	0.1	0	0	0	0.3
68	42.2	0.1	0	0	0	0	0	0	3.6	99	102.8	0.2	0.1	44.6	500.7
6	0.2	22	1	0	0	0	0	0	0.6	135	39	0	0	0.1	247.0
0	2	50	0.1	0	0	0	0	0	0	0	1	0	0	0	61.2
5	15	68	0	0	0	0	0	0	0	47	26	0	10	5	275.1
6	12	103	0	0	0	0	0	0	0	35	28	0	11	1	310.1
0	7	0.1	0	0	0	0	0	0	0	0	57	0	0	10	146.2
8	0.1	3	2	0	0	0	0	0	1.8	100	25.4	0.1	19.5	0	332.9
6	0.1	25	2	0	0	0	0	0	10	79	36.6	0.1	0	0.5	341.5
0	63	32	0	0	0	0	0	0	0	0	0	0	0	0	158.5

RAINFALL (MM) STATEMENT FOR THE MONTH OF AUGUST-2016

SR.No	PUNJAB	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1	B.NAGAR	0	0	0	0	3	0	0	0	0	0	5	37	0	0	0
2	B.PUR, CITY	0	0	0	1	2.7	0	0	0	0	0	0	0	0	0	0
3	B.PUR, A/P	0	0	0	0	16	0	0	0.1	0	0	0	0	0	0	0
4	BHAKKAR	0	0	0.1	0	0	16	0	0	0	21	0	30	0	0	2
5	CHAKWAL	0	0	0	0	0	0	15	0	0	40.5	4.2	0	0	0	0
6	D.G.KHAN	0	0	0	1	0	0	0	0	0	0	3	0	20	0	0
7	FAISALABAD	1	0	0.1	0.1	0	0	1.8	25	4	0	62	0	0	0	0.1
8	ISB,A/P	0	19	0	0	0	0	0	4	0	0	0.1	0	0	0	0.1
9	ISB,Z/P	0	0.1	0	0	0	0	0.1	63	0	31	0	0.1	0	0	1
10	ISB, S.Pur	0	0	0	0	0	0	0	3	0	71	0	3	0	0	5
11	ISB,S.ABAD	0	0	0	0	0	0	0	32	0	47	0	0	0	0	1
12	ISB, GOLRA	0	2	0	0	0	0	0	11	0	61	0	0	0	0	1
13	ISB,BOKRA	0	66	0	0	0	0	0	3	2	18	0	0	0	0	1
14	JHANG	0.1	0	0	0	0	3	0	14	0.1	0	52	0	0.1	0	1
15	JOHARABAD	0	0	0.1	0	0	0	0.1	0	0	63.6	2.6	0	0	0	0.1
16	JHELMUM	0	47	0	0	0	0	0.1	26	0	39.9	2.8	0	0	0	2
17	KASUR	0	0	3	0	0	13	17	0	0.1	0	20	28	0.1	0	22
18	KHANPUR	0	0	0	2	0	29	0	8	0	0	0	0	0	0	0
19	KOT ADDU	0.1	0	1	0	49.4	7.4	0	0	0	0	0	0	0	0	0
20	KAMRA	0	37	35	0	0	0.1	0	0.1	0	13	0	2	0	0	6
21	LAHORE, A/P	0	0	0.1	0	0	16	1	0	4	0	17.2	0.2	0	0	0.1
22	LAHORE, PBO	0.1	0	0.1	0	0	33	0.1	3	33.2	1	29.6	0.1	13	0	0.1
23	SHAHIQILLA	0	0	0	0	0	8	0	0	12	0	34	0	0	0	0
24	MISRI SHAH	0	0	0	0	0	10	0	0	12	0	38	0	0	0	0
25	UPPER.MALL	0	0	0	0	0	18	0	0	26	0	13	0	0	0	0
26	SHAHDARA	0	0	0	0	0	20	0	0	16	0	30	0	0	0	0
27	GULBERG	0	0	0	0	0	22	0	0	25	0	13	0	0	0	0
28	LUCKSHAMI	0	0	0	0	0	15	0	0	12	0	51	0	12	0	0
29	GULSHAN RAVI	0	0	0	0	0	6	0	0	2	0	12	0	0	0	0
30	IQBAL TOWN	0	0	0	0	0	36	0	0	0.1	0	24	0	0	0	0
31	SAMNABAD	0	0	0	0	0	33	0	0	0.1	0	27	0	0	0	0
32	JOHAR TOWN	0	0	0	0	0	18	18	0	0	0	42	0	0	0	0
33	TOWNSHIP	0	0	0	0	0	0	7	0	0.1	0	18	0	0	0	0
34	MUGAL PURA	0	0	0	0	0	0	0	0	20	0	21	0	0	0	0
35	TAJPURA	0	0	0	0	0	0	0	0	23	0	18	0	0	0	0
36	LAYYAH	0	0	0	0	4	0	0	0.1	0	0	0.1	9.6	0	0	0
37	M.B.DIN	12	54	0.1	0	0	0	8	9	0	73	15	0	0	0	14
38	MIANWALI	0	0	4	0	0	0	0	0	0	21	0.1	0.1	0.1	0	14
39	MULTAN	0	0	0	0.1	5	0	0	0	34	0	0.1	0	1.6	0	0
40	MANGLA	0	30	0.1	0	0	0	22	12	0	42.5	0.1	0	0	0	0.1
41	MURREE	0	0	2	0	0	0.1	21	10	0	1	0.3	18	0	0	4
42	N.P.THAL	0	0	0	0	0	4.6	23	3	0	27.2	7.4	1	0	0	0
43	OKARA	0	0	0	0	0	0	0	0	0	0	0	0	0	0	26
44	R.Y. KHAN	0	0	0	0	0	0	0	6	0.1	0	0	0	0	0	0
45	GUJRANWALA	3	3	0.1	0	0	0	0	18	0	23.6	16.2	0	0	0	3
46	GUJRAT	1	38	0	0	0	0	0	16	0	12.6	6.4	0	0	0	0.1
47	SAHIWAL	0	17	0	7	0	0	0	0.1	0	0	22	0	0.1	0	0
48	SARGODHA A/P	0	0.1	0	0	0	2	0	0	0	26	21	0	0	0	0.1
49	SARGODHA CITY	0	0	0	0	0	0	0	0.1	0	2	40	0	0	0	0
50	SHORKOT	9	0	0	10	0	0	0	10	0	0	0	0	30	0	0
51	SIALKOT CANTT	0	92	0	0	0	0	37	16	0	94.4	2.2	0	0	0	0.1
52	SIALKOT A/P	0.1	37	0.1	0	0	0	1	27	0	36	1.6	0.1	0	0	1
53	T.T. SINGH	8	1	0	0	0	0	0	23	0	0	0.1	0.1	0	0	0

RAINFALL (MM) STATEMENT FOR THE MONTH OF AUGUST-2016

16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Total till Date
0	0	0	0	0	0	0	0	0	0	4	5	66	12	0	0	132.0
0	0	0	0	0	0	0	0	0.1	0	0.1	0	1	0	0	0	4.9
0	0	0	0	0	0	0	0	0	0	0	0	0.3	0	0	0	16.4
0	0	16	0	0	0	0	0	0	0	0	0	13	0	0	0.1	98.2
0	0	0	0	0	0	5	0	0	0	0	5	2	0	9	4	84.7
0	0	0	0	0	0	0	0	0	0	0	0	4	0	0	1	29.0
0	0	0	0	0	0	0	0	0	0	0	0.1	0.1	0	0	0	94.3
0	0	1	0	0	0	0.1	0	0	0.1	0	0	8	1	19	1	53.4
0	0	6	0	0	0	2	0	0	72	0	0	84	0	4	2	265.3
0	0	5	0	0	0	1	0	0	20	0	0	80	0	0	1	189.0
0	0	2	0	0	0	0	0	0	0	0	0	30	0	0	0	112.0
0	0	15	0	0	0	0	0	0	0	0	0	43	0	0	0	133.0
0	0	1	0	0	0	0	0	0	0	0	0	22	0	0	0	113.0
0	0	0	0	0	0	0	0	0	57	0	0	17	0	0	0	144.3
0	0	30	0	0	0	6	0	0	0	0	0	16.2	0	1.4	0.1	120.2
0	0	3.4	0	0	0	4	0	0	0	0.1	0	65	0	7.4	0	197.7
0	4	37	0	0	0	8	0.1	0	17	3	0	55	0	0.1	0	227.4
0	0	0	0	0	0	0	0	0	0	0	0	4.4	0.1	0	0	43.5
0	0	0	0	0	0	0	0	0	0.1	0	3	1	0	0	0	62.0
0	0	4	0	0	0	3	0	0	0	0	0	0	0	0	0	100.2
0	1.6	3.4	0	0	0.1	0.1	0	0.1	42	43.5	49	70.8	0	15	0	264.2
0	10	10.5	0	0	3	0.1	0.1	0.1	18	65.6	0.1	59	0	37	0	316.8
0	10	0	0	0	10	0	0	0	10	48	0	30	0	24	0	186.0
0	7	0	0	0	8	0	0	0	11	62	0	40	0	26	0	214.0
0	11	6	0	0	7	0	0	0	17	43	0	63	0	52	0	256.0
0	4	0	0	0	8	0	0	0	10	50	0	0	0	0	0	138.0
0	12	19	0	0	8	0	0	0	23	52	0	60	0	31	0	265.0
0	9	1	0	0	7	0	0	0	15	45	0	40	0	61	0	268.0
0	24	0	0	0	6	0	0	0	13	39	0	16	0	2	0	120.0
0	13	9	0	0	3	0	0	0	23	52	0	28	0	9	0	197.1
0	17	16	0	0	3	0	0	0	21	43	0	32	0	6	0	198.1
0	8	15	0	0	2	0	0	0	64	46	0	44	0	12	0	269.0
0	3	0	0	0	0	0	0	0	39	31	0	18	0	0	0	116.1
0	3	0	0	0	0	0	0	0	7	58	0	25	0	20	0	154.0
0	2	2	0	0	1	0	0	0	25	57	0	89	0	35	0	252.0
0	0	33	0	0	0	0	0	0	0	0	0	14	0	0	0	60.8
0	0	0	0	0	0	4	0	0	1	0	6	22	0	73	0	291.1
0	1	14	0	0	0	3	0	0	0	0	0	3	0	0	35	95.3
0	0	0	0	0	0	0	0	0	1	0	9	19.1	0	0	0	69.9
0	0	1.8	0	0	0	37	0	0	0	0	1	51	14	45	0	256.6
0	0	18	0	0	0	7	0	0	5	0.1	0	94.8	2	1	12	196.3
0	0	47	0	0	0	20	0	0	0	0	0	0	0	0	0	133.2
0	0	0	0	0	0	0	0	0	0	50.2	0	30	24	0	0	130.2
0	0	0	0	0	0	0	0	0	0	0	0	16.5	0.1	0	0	22.7
0	0	0	0	0	0	0	0	0	3	21.4	0	0.2	0.1	9.4	0	101.0
0	0	0	0	0	0	0.1	0	0	0.1	0.1	0	2.3	0.1	0	0	76.8
0	0	0	0	0	0	0	0.1	0	1	2.4	0	38	35	0	0	122.7
0	0	0.1	0	0	0	4	0	0	7	0	0	0.1	0	27	0	87.4
0	0	1	0	0	0	7	0	0	18	0	0	0.1	0	35	0	103.2
0	0	10	0	0	0	0	0	0	2	0.1	0.1	1	0	0	0	72.2
0	0.1	0	0	0	1	3	0	0	0.1	9.7	0.1	0.2	0.1	6	0	262.0
0	0	0	0	0	0	1	0	0	1	5.6	0.1	1.2	0	0	0	112.8
0	0	0	0	0	0	0	0	0	0	0.1	9	26	0	0	0.1	67.4

RAINFALL (MM) STATEMENT FOR THE MONTH OF SEPTEMBER-2016

SR.No	PUNJAB	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1	BAHAWALNAGAR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2	BAHAWALPUR,CITY	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3	BAHAWALPUR,AIRPORT	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4	BHAKKAR	0	0.6	0	0	0	0	0	0	0	0	0	11	0	0	0
5	CHAKWAL	0	16	0	0	0	0	0	0	0	0	0	2	0	5.2	0
6	D.G.KHAN	0	0.1	0	0	0	0	0	0	0	0	0	0	0	0	0
7	FAISALABAD	0	6	0	0	0	0	0	0	0	0	0	0	0.6	0	0
8	ISLAMABAD,AIRPORT	0	0.1	0.1	0	0	0	0	0	0	0	0	14	0	9	0
9	ISLAMABAD,ZEROPOINT	0	0.1	0	0	0	0	0	0	0	0	0	3	0	0.1	0
10	ISLAMABAD,SAIDPUR	0	0	0	0	0	0	0	0	0	0	0	9	0	4	0
11	ISLAMABAD,SHAMSABAD	0	0	0	0	0	0	0	0	0	0	0	2	0	3	0
12	ISLAMABAD,GOLRA	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0
13	ISLAMABAD,BOKRA	0	0	0	0	0	0	0	0	0	0	0	16	0	1	0
14	JHANG	0	0.1	0	0	0	0	0	0	0	0	0	0	0	0	0
15	JOHARABAD	0	2.2	0	0	0	0	0	0	0	0	0	0	0	43	0
16	JHELMUM	0	0	0	0	0	1	0	0	0	0	0	48	0	5.4	0
17	KASUR	0	3	0	0	0	0	0	0	0	0	0	0	0	0.1	0
18	KHANPUR	14	0	0	0	0	0	0	0	0	0	0	0	0	0	0
19	KOT ADDU	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
20	KAMRA	0	1	0	0	0	0	0.1	0	0	0	0	0.1	0	1.5	0
21	LAHORE, AIRPORT	0	21	0	0	0	0.1	0	8	25	0	0	0	0	7	2
22	LAHORE,CITY	1	96.6	0	0	0	0	0	0	0	0	0	0	0	0	0.1
23	LAHORE,SHAHI QILLA	0	66	0	0	0	0	0	0	0	0	0	0	0	0	0
24	LAHORE,MISRI SHAH	0	66	0	0	0	0	0	0	0	0	0	0	0	0	0
25	LAHORE,UPPER MALL	0	40	0	0	0	0	0	0	0	0	0	0	0	0	0
26	LAHORE,SHAHDARA	0	28	0	0	0	0	0	0	0	0	0	0	0	0	0
27	LAHORE,GULBERG	4	30	0	0	0	0	0	0	0	0	0	0	0	0	0
28	LAHORE,LUKSHMI	0	88	0	0	0	0	0	0	0	0	0	0	0	0	0
29	LAHORE,GULSHAN RAVI	0	54	0	0	0	0	0	0	0	0	0	0	0	0	3
30	LAHORE,IQBAL TOWN	0	64	0	0	0	0	0	0	0	0	0	0	0	0	0
31	LAHORE,SAMNABAD	0	86	0	0	0	0	0	0	0	0	0	0	0	0	0
32	LAHORE,JOHAR TOWN	0	35	0	0	0	0	0	0	0	0	0	0	0	0	0
33	LAHORE,TOWNSHIP	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0
34	LAHORE,MUGAL PURA	0	62	0	0	0	0	0	0	13	0	0	0	0	0	0
35	LAHORE,TAJPURA	0	70	0	0	0	4	0	0	24	0	0	0	0	0	0
36	LAHORE,PUNJAB UNIVERSITY	4	54	0	0	0	0	0	0	0	0	0	0	0	0	0
37	LAYYAH	0	36	0	0	0	0	0	0	0	0	0	1	0	0	0
38	MANDIBAHAUDDIN	0	0	0	0	0	0	0	0	0	0	0	0	0	0.1	0
39	MIANWALI	0	0.1	0	0	0	0	0	0	0	0	0	3	0	0.1	0
40	MULTAN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
41	MANGLA	0	0.1	0	0	0	5	0	0	0	0	0	1	0	2.5	0
42	MURREE	0	0	4.6	0	0	30	0	0	0	0	0	5	0	33	0
43	NOORPUR THAL	0	0.1	0	0	0	0	0	0	0	0	0	1	0	0	0
44	OKARA	0	7	0	0	0	0	0	0	0	0	0	0	0	0	0
45	RAHIM YAR KHAN	64	0	0	0	0	0	0	0	0	0	0	0	0	0	0
46	GUJRANWALA	0.1	0.6	0	0	0	0	0	0	0	0	0	0	0	0	2
47	GUJRAT	0	0	0	0	0	0.1	0	0	0	0.4	0	1	0	0.1	0
48	SAHIWAL	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
49	SARGODHA A/P	0	12	0	0	0	0	0	0	0	0	0	0	0	17	0
50	SARGODHA CITY	0	0	0	0	0	0	0	0	0	0	0	0	0	6	0
51	SHORKOT	0	0.1	0	0	0	0	0	0	0	0	0	0	0	0	0
52	SIALKOT CANTT	31	0	0	0	0	0	0	0	0	0	0	1	0	31	0
53	SIALKOT AIRPORT	0	0	0	0	0	0	0	0	0	0	0	9	0	37	0
54	T.T. SINGH	0	38.6	0	0	0	0	0	0	0	0	0	0	0	0	0

RAINFALL (MM) STATEMENT FOR THE MONTH OF SEPTEMBER-2016

16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	Date
0	0	0	0	0	0	0	0	0.1	0	0	0	0	0	0	0.1
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0
0	0	0	0	0	0	0	0	21	0	0	0	0	0	0	32.6
0	0	0	0	0	0	6.4	0	1.2	0	0	0	0	0	0	30.8
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.1
0	0	0	0	0	0	3	0	0	0	0	0	0	0	0	9.6
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	23.2
0	0	0	0	0	0	0	0	0	0	0	0	0	0.1	0	3.3
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	13.0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5.0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2.0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	17.0
0	0	0	0	0	0	4.2	0	0	0	0	0	0	0	0	4.3
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	45.2
0	0	0	0	0	0	10.4	0	0	0	0	0	0	0	0	64.8
0	0	0	0	0	0	0	0	0	0	0	0.1	0	0	0	3.2
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	14.0
0	0	0	0	0	0	0	0.1	0	0	0	0	0	0	0	0.1
0	0	0	0	0	0	1	0.1	0	0	0	0	0	0	0	3.8
0	0	0	0	0	0.1	2	0	0	0	0	0	0	0	0	65.2
0	0	0	0	0.1	27.6	2.5	0	0	0	0	0	0	0	0	127.9
0	0	0	0	0	0	19	0	0	0	0	0	0	0	0	85.0
0	0	0	0	0	0	17	0	0	0	0	0	0	0	0	83.0
0	0	0	0	5	0	3	0	0	0	0	0	0	0	0	48.0
0	0	0	0	0	0	7	0	0	0	0	0	0	0	0	35.0
0	0	0	0	0	13	5	0	0	0	0	0	0	0	0	52.0
0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	90.0
0	0	0	0	0	0	10	0	0	0	0	0	0	0	0	67.0
0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	66.0
0	0	0	0	0	6	2	0	0	0	0	0	0	0	0	94.0
0	0	0	0	0	0	3	0	0	0	0	0	0	0	0	38.0
0	0	0	0	0	0	5	0	0	0	0	0	0	0	0	8.0
0	0	0	0	12	0	3	0	0	0	0	0	0	0	0	90.0
0	0	0	0	15	0	2	0	0	0	0	0	0	0	0	125.0
0	0	0	0	0	0	10	0	0	0	0	0	0	0	0	68.0
0	0	0	0	0	0	0	0	24	0	0	0	0	0	0	61.0
0	0	0	0	0	0	2	0	0	0	1.5	0	0	0	0	3.6
0	0	0	0	0	0	0	0	4	0	0	0	0	0	0	7.2
0	0	0	0	0	0	0	0	2.6	0	0	0	0	0	0	2.6
0	0	0	0	0	0	4.5	0.1	0	0	0.1	0	0	0	0	13.3
0	0	0	0	0	0	6	0	32.2	0	0.4	0	1	1	1	114.2
0	0	0	0	0	0	1.4	0	3.4	0	0	0	0	0	0	5.9
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	7.0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	64.0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2.7
0	0	0	0	0	0	0	0.1	0	0	0	0	0	0	0	1.7
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1.0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	29.0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	6.0
0	0	0	0	0	0	0	0	40	0	0	0	0	0	0	40.1
0	0	0	0	0	0	7.6	22	0	0	0	0	0	0	0	92.6
0	0	0	0	0	0	0	0.1	0	0	0	0	0	0	0	46.1
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	38.6

ANNEXURE 5

FLOOD FIGHTING EQUIPMENT

SR.No	NAME OF DISTRICT	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
		Life Jackets	Life Rings	Life Lines	Boats	CBM Engine	First Aid Kits	First Aid Kits	Rescue Bag	Safety Harnesses	Boat or Floating Buoys	Fire Brigade	De-Watering Sew.	Sucker Machine	Lifter Machine	Water Tanks / Bowzers	Tractors / Trolleys
1	Lahore	10	10	-	16	5	-	-	0	-	-	-	0	-	-	-	-
2	Kasur	163	66	-	24	23	-	-	61	-	-	-	7	-	-	3	12
3	Sheikhupura	130	58	-	11	12	-	-	0	-	-	-	81	-	-	-	-
4	Nankana Sahib	43	1	-	4	5	-	-	0	-	-	-	12	-	-	-	-
	Total	346	135	-	55	45	-	-	61	-	-	-	100	-	-	3	12
5	Bahawalpur	32	8	-	7	7	-	-	-	-	-	-	33	-	-	-	-
6	Bahawalnagar	30	12	50	6	6	18	-	6	-	-	-	20	27	-	-	-
7	Rahim Yar Khan	158	27	-	20	18	0	-	-	-	-	-	27	0	-	-	-
	Total	220	47	-	33	31	18	-	-	-	-	-	80	27	-	-	-
8	D.G Khan	385	47	-	20	17	-	-	-	-	-	-	35	3	1	1	4
9	Layyah	694	66	-	18	18	-	-	-	22	-	697	18	-	-	-	11
10	Muzaffargarh	932	0	-	22	23	-	-	-	-	-	-	58	4	4	6	60
11	Rajanpur	238	75	-	17	17	-	-	-	-	-	-	35	-	-	-	-
	Total	2249	188	-	77	75	-	-	22	-	697	146	7	5	7	75	-
12	Faisalabad	151	20	4	7	7	54	1	12	20	-	10	179	-	-	13	-
13	Chiniot	125	100	-	13	13	-	-	-	-	-	-	10	-	-	-	-
14	Jhang	1140	217	-	49	50	-	-	-	-	-	2	30	-	-	2	44
15	Toba Tek Singh	96	3	-	3	3	-	-	-	-	-	-	15	-	-	-	-
	Total	1512	340	-	72	73	-	-	-	-	-	-	234	-	-	-	-
16	Gujranwala	238	71	-	17	18	-	-	-	-	-	-	78	-	-	-	-
17	Gujrat	217	8	-	9	9	-	-	-	-	-	3	7	-	-	-	29
18	Hafizabad	499	144	-	35	35	-	-	-	-	-	-	37	-	-	-	-
19	Mandi Bahauddin	324	104	-	12	12	-	-	-	-	-	1	13	-	-	-	9
20	Narowal	227	104	14	12	12	15	10	8	4	-	4	27	-	-	-	-
21	Sialkot	148	37	-	24	24	-	-	-	-	-	-	84	-	-	-	-
	Total	1653	468	14	109	110	15	10	8	4	-	8	246	-	-	-	38
22	Multan	490	122	-	25	25	-	-	-	-	-	-	82	-	-	-	-
23	Khanewal	145	15	-	10	10	-	-	-	-	-	-	7	-	-	-	-
24	Lodhran	24	8	-	3	3	8	-	4	28	-	2	7	1	1	-	5
25	Vehari	119	43	-	9	8	-	-	-	-	-	-	13	-	-	-	-
	Total	778	188	0	47	46	-	-	-	-	-	-	109	1	1	-	5
26	Rawalpindi	135	10	-	8	5	-	-	-	-	-	-	43	-	-	-	-
27	Attock	12	6	-	1	1	-	-	-	-	-	-	16	-	-	-	-
28	Chakwal	16	2	-	1	1	-	-	-	-	-	-	12	-	-	-	-
29	Jhelum	80	2	-	8	8	-	-	-	-	-	-	19	-	-	-	-
	Total	243	20	-	18	15	-	-	-	-	-	-	90	-	-	-	-
30	Sahiwal	150	83	-	9	8	-	-	-	-	-	-	30	-	-	-	-
31	Okara	146	65	20	10	10	20	30	24	46	-	14	34	-	-	26	-
32	Pakpattan	157	62	-	6	6	-	-	-	-	-	-	2	-	-	-	-
	Total	453	210	20	25	24	20	30	24	46	-	14	66	-	-	26	-
33	Sargodha	299	40	-	4	4	-	-	-	-	-	-	35	-	-	-	-
34	Bhakkar	204	84	4	10	10	12	-	12	26	-	3	12	3	1	5	24
35	Khushab	150	52	0	14	18	-	-	-	13	-	-	15	-	1	11	30
36	Mianwali	155	30	-	10	10	5	4	20	2	2	-	10	-	-	4	22
	Total	808	206	4	38	42	17	4	32	41	2	3	72	3	2	16	54
	Grand Total	8262	1802	38	474	461	70	44	125	113	2	722	1143	38	8	52	184

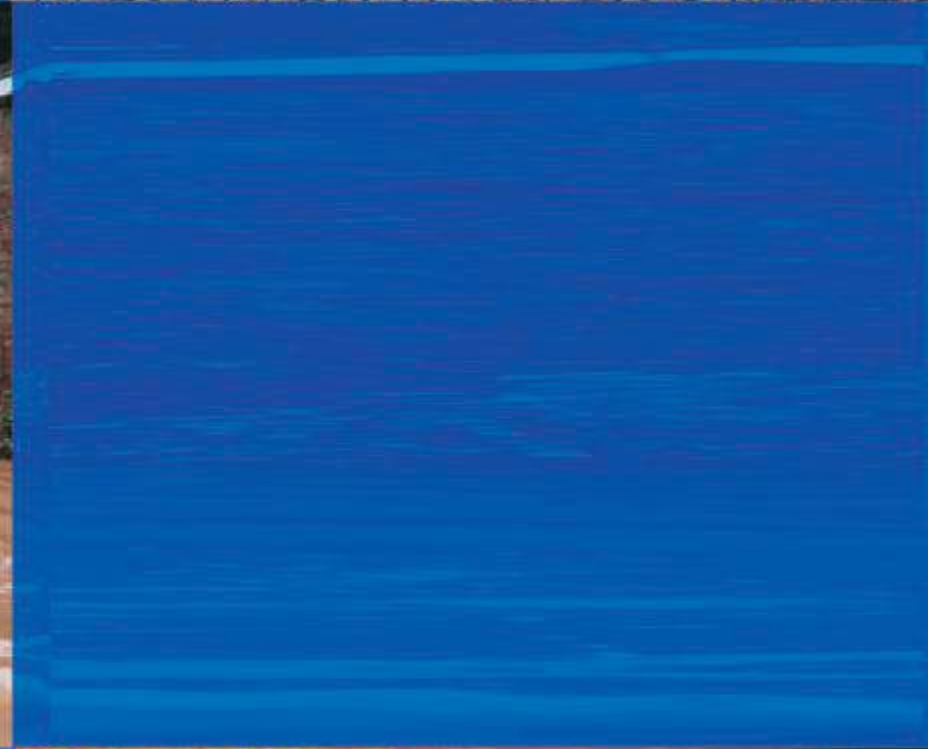
ANNEXURE 5

FLOOD FIGHTING EQUIPMENT

17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44
Dumpers	Excavator	Cranes	Bulldozers / Loaders	Jeeps	Pickups	Mini Trucks	Axes/Shovels /Picks	Dry Suits	Electrical Power Generators	Extension Ladder	Foggin Machines	Hydraulic Cutter	Jumping Sheet	Megaphones	Rescue Tripod	Rope Ladders	Ropes	Rubber Gloves (11000 Watt)	SCBA Cylinders	Search Lights	Tent	Blankets	Torches / Lamps	Dredgers	Sand Bags	Mosquito Net	Plastic Mats
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	10	-	-	0	0
-	-	-	-	-	-	-	-	2	4	-	-	-	-	-	-	-	-	-	-	98	-	-	-	-	-	0	0
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	200	-	-	-	-	-	0	100
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	84	-	-	-	-	-	0	0
-	-	-	-	-	-	-	-	2	4	-	-	-	-	-	-	-	-	-	-	383	-	10	-	-	-	0	100
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2506	-	-	-	-	-	0	0
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	250	-	-	-	-	-	250	250
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3450	-	-	-	-	-	1200	0
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6206	-	-	-	-	-	1450	250
-	-	-	-	1	-	-	-	-	-	-	10	2	-	-	-	-	-	-	-	2567	-	-	-	-	-	2600	4
60	-	-	15	72	60	7	-	-	-	-	-	-	-	-	-	-	-	-	-	1322	-	-	-	-	-	0	498
-	-	-	-	-	-	-	-	-	1	-	34	-	-	-	-	-	-	40	-	94	-	-	-	-	-	320	865
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1447	-	-	-	-	-	0	1000
60	-	-	15	73	60	7	-	-	1	-	44	-	-	-	-	-	-	40	-	5430	-	-	-	-	-	2920	2367
7	3	2	2	-	-	-	-	-	-	-10	-	2	13	-	-	-	-	-	-	327	-	-	-	-	-	100	100
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	500	-	-	-	-	-	1000	1000
-	-	-	-	-	-	-	-	-	-	-	15	-	-	-	-	-	-	-	-	1642	-	-	-	-	-	200	955
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	720	-	-	-	-	-	0	0
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3189	-	-	-	-	-	1300	2055
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	713	-	-	-	-	-	500	500
-	1	-	-	-	6	-	-	-	-	-	-	1	-	-	-	-	-	-	-	10	350	200	-	-	-	0	200
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1141	-	-	-	-	-	0	988
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0	0
-	-	-	-	-	-	1	-	2	2	3	4	-	5	5	3	10	8	11	9	17	781	200	15	-	-	492	504
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1533	-	-	-	-	-	1300	490
-	1	-	-	-	6	1	-	2	2	3	4	1	5	5	3	10	8	11	9	27	4518	400	15	-	-	2292	2682
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	185	-	-	-	-	-	0	0
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	200	-	-	-	-	-	0	100
-	-	-	-	5	1	-	-	-	-	-	8	-	-	-	-	-	-	-	-	4	250	-	-	-	-	200	250
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	503	-	-	-	-	-	200	300
-	-	-	-	5	1	-	-	-	-	-	8	-	-	-	-	-	-	-	-	4	1138	-	-	-	-	400	650
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	48	-	-	-	-	-	0	10
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	-	-	-	-	-	0	6
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	58	-	-	-	-	-	0	0
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	804	-	-	-	-	-	600	590
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	912	-	-	-	-	-	600	606
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	-	-	-	-	-	0	100
3	1	-	-	-	20	-	-	-	-	12	-	-	8	-	-	-	-	-	-	20	616	-	-	-	-	500	500
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-											



Government of Punjab



24/7 EMERGENCY HELPLINE **1129**

[pdma.punjab](https://www.facebook.com/pdma.punjab) | [@pdmapunjab](https://twitter.com/pdmapunjab) | www.pdma.gop.pk

