

PROVINCIAL MONSOON CONTINGENCY PLAN 2014

DRAFT VERSION



PROVINCIAL DISASTER MANAGEMENT AUTHORITY
GOVERNMENT OF SINDH

analyze related risks for not just their humanitarian impacts but also the associated adverse affects on private and public infrastructure, and to define roles and responsibilities of diverse stakeholders for preparedness and response.

It is worth mentioning here that PDMA carried out joint sessions for 2014 Monsoon contingency planning with district administrations, provincial line departments , armed forces and other stakeholders primarily for anticipating likely scenarios and perceiving threat levels. While further drawing conclusions from the inputs through the technical experts and relevant departments, it mainly involves identifying gaps and challenges to effective emergency response and then planning and implementing a series of actions to increase response capacity and reduce potential gaps. Unlike former simple or generic scenarios were used as a basis for developing preparedness plans. The key anticipated outcomes are:

- Awareness for Building Capacities for Response,
- Depict anticipated threat perception for earmarking required resources,
- Build Integrated Planning Capacities, and
- Define required gaps ensuing Preparatory Measures.

LIST OF ACRONYMES

DDMA	District Disaster Management Authority
DRR	Disaster Risk Reduction
DEOC	District Emergency Operation Center
DMA	Disaster Management Authority
ERC	Emergency Relief Cell
FFC	Federal Flood Commission
FFD	Flood Forecasting Division
FFT	Flood Forecasting Telemetry System.
GHQ	Army General Headquarters
HH	Households
INGO	International Non-Governmental Organization
LBOD	Left Bank Outfall Drain
MIRA	Multi Cluster Initial Rapid Assessment
NDMA	National Disaster Management Authority
NGO	Non-Governmental Organization
NHA	National Highways Authority
NHEPRN	National Health Emergency Preparedness and Response Network
OCHA	UN Office for the Coordination of Humanitarian Affairs
O&M	Operations and Maintenance
PDMA	Provincial Disaster Management Authority
PEOC	Provincial Emergency Operations Center
PMD	Pakistan Meteorological Department
PRCS	Pakistan Red Crescent Society
RBOD	Right Bank Outfall Drain
SASCOF	South Asian Climate Outlook Forum
SITREP	Situation Report
SUPARCO	Space and Upper Atmosphere Research Commission
SOPs	Standard Operating Procedures
UN	United Nations
UNICEF	UN Children's Fund
USAR	Urban Search and Rescue Team
Wash	Water, Sanitation and Hygiene
WHO	World Health Organization

EXECUTIVE SUMMARY

The nature and intensity of natural disasters has changed considerably over the period of time. Disaster risk management attempts to address risks associated with potential hazards as an integral part of development. Consequently, it is less events and more process oriented. It is based on a continuous assessment of vulnerabilities and risks and involves many actors and stakeholders. Given the complexity, contingency planning is required to define what preparedness mechanisms will be used, when and where. Before a response is required, contingency planning affords agencies both government and humanitarian the opportunity to define when, where and why their emergency response resources will be deployed, when emergency funds will be used and what kind of responses, materials and types of personnel they will need.

The lessons learnt from unprecedented floods of 2010 followed by heavy monsoon rainfalls of 2011 and flash flooding in 2012 call for quick and effective actions to control the situation and above all, to save lives. However, effective action depends on the existence of practical and well tested contingency plans. The Provincial Contingency Plan has been formulated for translating recommendations from district administrations, line departments and other stakeholders into action. However, the devastation caused due to floods/ rainfalls witnessed since last four years has necessitated for taking on board all agencies for an integrated contingency planning, involving government departments, districts, armed forces and humanitarian actors, thereby ensuring synergized and optimal utilization of resources by agencies in the field while complementing each other with appropriate linkages and better coordination to support actions along lines of command.

PDMA continues to emphasize upon the Contingency Planning process as a preparedness measure for response to natural hazards particularly Monsoon Contingency. Following catastrophic floods since 2010, this plan focuses on planning for the upcoming 2014 monsoon hazards to identify and

CHAPTER 1

OVERVIEW OF THE SINDH PROVINCE

1.1 GEOGRAPHY

The Province of Sindh is located in the South- Eastern part of the Country (between Lat 23-35 and Lat 28- 30 N). Its gross geographical area is 140,914 Sq. km which is 18% of the Country. The geographical area is 14 million hectares out of which almost 8.0 million hectare is cultivable, and the remaining area is not available for cultivation mostly lying in the northern hills of Khirthar Range, Eastern desert of Thar Desert and Achharo Thar and the Riverine area. Sindh's 60% land area is arid. Annual average precipitation is 5 inches yearly. The mighty River Indus flows in the middle of the province. There are seasonal streams which become active in the monsoon season, they emanate from the Khirthar hill range from West of Province, which fallout in River Indus and Arabian Sea. The boundaries of Sindh are touched by Arabian Sea in South, India in East, Punjab in North and Balochistan in West. Administratively Sindh Province is divided in 6 Divisions comprising of 29 Districts.

The Province took its name from River Sindh (as per the Greeks). Predominantly, it is an agricultural and pastoral economy. Lately minerals have been identified like Oil, Gas, Coal, Granite and Cut Stone etc. These are being extracted which contribute substantially to the national produce. Besides the province has industries of various kind which include Textile, Chemical, Cement, Steel and others. Most of the industries are located in three Cities- Karachi, Kotri/ Hyderabad and Sukkur. There are two modern sea ports: Karachi Port and Bin Qasim Port, both of which are situated in Karachi and serve the entire Country including Afghanistan.

1.2 GEOLOGY

The Geology of Sindh is divisible in three main regions, the mountain ranges of Kirthar, Pab containing a chain of minor hills in the West and in East it is covered by the Thar Desert and part of Indian Platform where the main exposure is of Karonjhar mountains, which is famous for Nagar Parkar Granite. In the North Sindh is enquired by rocks of Laki range extending to Suleiman range and its Southern most part is encircled by the Arabian Sea. The rocks exposed in this area belong to upper Cretaceous which are recent in age. The sub-surface rocks are about 20,000 feet thick and belong to Cretaceous and Pre-Cretaceous periods.

Basin wise Sindh lies in the lower Indus Basin and its main tectonic features are the platform and fore deep areas. Thick sequences of Pab sandstone of Upper Cretaceous, Ranikot Group (Khadro, Bara, Lakhra) of Paleocene, Laki, Tiyon, and Khirthar of Eocene age, Nari Formation of Oligocene, Gaj Formation of Lower to Middle Miocene, Manchar of Upper Miocene to Pliocene, Dada Conglomerate of Pleistocene are present in various areas of Sindh. Limestone and sandstones are the most dominant sedimentary rocks in the area. Structurally Sindh generally contains gently folded anticlinal features trending in North-South direction. The major active faults in Province are as under:

SURJANI FAULT: N-S Trending: *Located West of Larkana. It cuts Quaternary deposits. The maximum magnitude of the Earthquake associated with the fault is of the order $M=6.1$ on Richter Scale.*

JHIMPIR FAULT: N-W Trending: *A number of epicenters are located on the fault. The fault has produced an earthquake of $M=5.6$ on Richter Scale.*

PAB FAULT: NN-W Trending: *Located in the Eastern part of Pab*

range. The maximum magnitude of the earthquake associated with fault is of the order $M=7.0$ on Richter Scale.

RANN OF KUTCH: E-W Trending: The fault has produced an earthquake of the order $M=7.6$ on Richter Scale. Recent studies have revealed that this fault traverses the Karachi Metropolitan Area.

1.3 DEMOGRAPHY

The 1998 Census of Pakistan indicated a population of 30.4 million, the current population is estimated to be 50 million using a compound growth in the range of 2.8% to 3.0% since then. With just under half being urban dwellers, mainly living in Karachi, Hyderabad, Sukkur and Larkana. It is 23% of national count. Male population is 26.315 million and Female population is 23.685 million. The literacy ratio is 45.29%- Male 54.50% and Female 34.78%. Rural area 25.73% - Male 37.89% and female 12.23% whereas, urban - 63.72% - Male 69.75% & Female 56.66%. Agriculture & Fisheries workers count 34.84% out of which 65.56% is Rural Population, Elementary occupation, Service sector and Business count 43.65%.

1.4 SOCIETY

The society is cosmopolitan and the languages spoken besides Sindhi are Urdu, Punjabi, Pashto, Siraiki, Balochi, Brahui, Rajasthani, and Gujarati, while Balochis and Urdu-speaking are recent immigrants. Both Balochi, Sindhi and natives speak Sindhi language as their mother tongue.

Sindh's population is predominantly Muslim. The Province of Sindh is also home to nearly all of Pakistan's Hindus, numbering roughly 2.3 million, although most Sindhi Hindus migrated to India at the time of the partition. Smaller groups of Christians, Parsis or Zoroastrians, Ahmadis, and a few members of the

Jewish community can also be found in the province.

The society in general is harmonious , but in the last couple of decades communal strife have been reported, which affects the peace of the Province in particular and the Country at large in general.

1.5 ECONOMY

As of the rest of Pakistan, the economy of Sindh is predominantly Agricultural and depends almost entirely on artificial Irrigation. The principal source of water is the Indus River, on which three irrigation barrages have been built- Guddu on the Punjab border; the Lloyd Barrage in Sukkur and the Kotri barrage at Kotri is the farthest at south.

Sindh's principal crops are Wheat, Rice, Cotton, Oilseeds, Sugarcane, Vegetables and Fruits. Sheep, Cattle, Camels, and Poultry are raised, and there is a healthy fishing industry as well. Manufacturing industries are concentrated in Karachi, Hyderabad, Nooriabad, Kotri and Sukkur. They produce Textile Products, Cement, Cardboard, Chemicals, Electric Power Supplies, Rail-Road Equipment, Machinery and other Metal products.

1.6 SHELTER

In 1998, there were 5.022 million households in Sindh, with average household size at 6.0 persons and occupancy at 3.3 persons per room. The overall housing stock comprised 52 percent katcha houses mostly without proper water supply, 48 percent semi-pucca houses mostly without planned sanitation or sewerage system. The majority of rural housing is katcha (mud), with minimal water supply and sanitation or drainage services. Almost half of the urban population is living in slums and katchi abadis, with inadequate housing and living conditions.

1.7 ADMINISTRATIVE SYSTEM

Administratively Sindh Province comprises of 6 Divisions with 29 Districts. The 6 Divisions include Karachi, Hyderabad, Mirpurkhas, Sukkur, Larkana and a newly created Bhambhore Division. The Divisions are headed by Divisional Commissioner whereas the Deputy Commissioners are the head of District Administrations. The Administrative/ Line Departments are headed by Administrative Secretary. Some of the most important departments include Home, Finance, Planning & Development, Revenue, Health, Education, Works & Services, Agriculture, Forest & Wildlife, Law and Social Welfare, etc. There are 129 Talukas / Tehsils / Sub Divisions. The number of villages (settlements) was 66,923 as per census of 1998 within 5871 dehs (Mauza).

CHAPTER – 2

MONSOON CONTINGENCY PLAN – GENERAL OVERVIEW OF FLOODS

2.1 FLOODS

When rivers overflow their banks they cause damage to property and crops. Floods are common and costly Natural Disasters.

Floods usually are local, short-lived events that can happen suddenly, sometimes with little or no warning. They usually are caused by intense storms that produce more runoff than an area can store or a stream can carry within its normal channel. Rivers can also flood when dams fail, when ice jams or landslides temporarily block a channel, or when snow melts rapidly. In a broader sense, normally dry lands can be flooded by high lake levels, by high tides, or by waves driven ashore by strong winds.

Small streams are subject to floods (very rapid increases in runoff), which may last from a few minutes to a few hours. On larger streams, floods usually last from several hours to a few days. A series of storms might keep a river above flood stage (the water level at which a river overflows its banks) for several weeks.

Floods can occur at any time, but weather patterns have a strong influence on when and where floods happen. Cyclones, or Storms that bring moisture inland from the Ocean, can cause floods. Thunderstorms are relatively small but intense storms that can cause floods in smaller streams. Frontal storms form at the front of large, moist air masses moving across the Country and can cause floods. Hurricanes are intense tropical storms that can cause floods.

The size, or magnitude, of a flood is described by a term called Recurrence Interval. By studying a long period of flow records for a stream, it is

possible to estimate the size of a flood that would, for example, have a 5-year Recurrence Interval (called a 5-year flood). A 5-year flood is one that would occur, on the average, once every 5 years. Although a 100-year flood is expected to happen only once in a century, there is a 1 percent chance that a flood of that size could happen during any year.

Flood plains are lands bordering rivers and streams that normally are dry but are covered with water during floods. Floods can damage buildings or other structures placed in flood plains. They also can change the pattern of water flow and increase flooding and flood damage on adjacent property by block

The confluence of River Basins, the Canal Irrigation Network and Interrupted Drainage System are some of the major reasons of flooding in Pakistan.

2.1.1 CAUSES OF FLOODS

Floods can be divided In five major categories

(I) Monsoon Floods: Flooding along rivers is a natural and inevitable. Some floods occur seasonally when monsoon rains, coupled with melting snows, fill river basins with too much water, too quickly. Torrential rains from decaying Hurricanes or Tropical Systems can also produce river flooding.

It has been argued that El-Nino and La Nina factors have upset the system of rains in India, Pakistan, Iran and Afghanistan. Incidentally El-Nino events are a local manifestation of a global phenomenon, which begins with the relaxation of the wind stress that drives warm water towards the West. In the case of the monsoons, which are also part of a global phenomenon, the atmospheric pressure at sea level at the South-West of the Indian Peninsula, the ocean temperature in the Bay of Bengal and the rainfall fluctuation across South Asia are inter-related critical factors.

(II) Flash Floods: An arroyo is a water-carved gully or a normally dry creek found in arid or desert regions. When storms appear in these areas, the rain water cuts into the dry, dusty soil creating a small, fast-moving river. Flash flooding in an arroyo can occur in less than a minute, with enough power to wash away sections of pavement.

Because of its rapid nature flash floods are difficult to forecast and give people little time to escape or to take food and other essentials with them.

(III) Floods due to Breaches: Floods due to the breaches of river embankments and canal breaches are a frequent occurrence in all the districts of Pakistan.

(IV) Urban Floods: As undeveloped land is paved for construction, it loses its ability to absorb rainfall. Rainwater cannot be absorbed into the ground and becomes runoff, filling parking lots, making roads into rivers, and flooding basements and businesses. An urban area can be flooded by an amount of rainfall that would have had no impact in a rural area. But in crowded towns and cities, rainwater flows into storm sewers and drainage thus flooding them.

(V) Coastal Floods - Hurricanes and Tropical storms can produce heavy rains, or drive ocean water into land. Beaches and coastal houses can be swept away by the water. Coastal flooding can also be produced by sea waves called Tsunamis, Giant Tidal Waves that are created by Volcanoes or Earthquakes in the ocean.

2.2 MONSOON HAZARDS IN SINDH

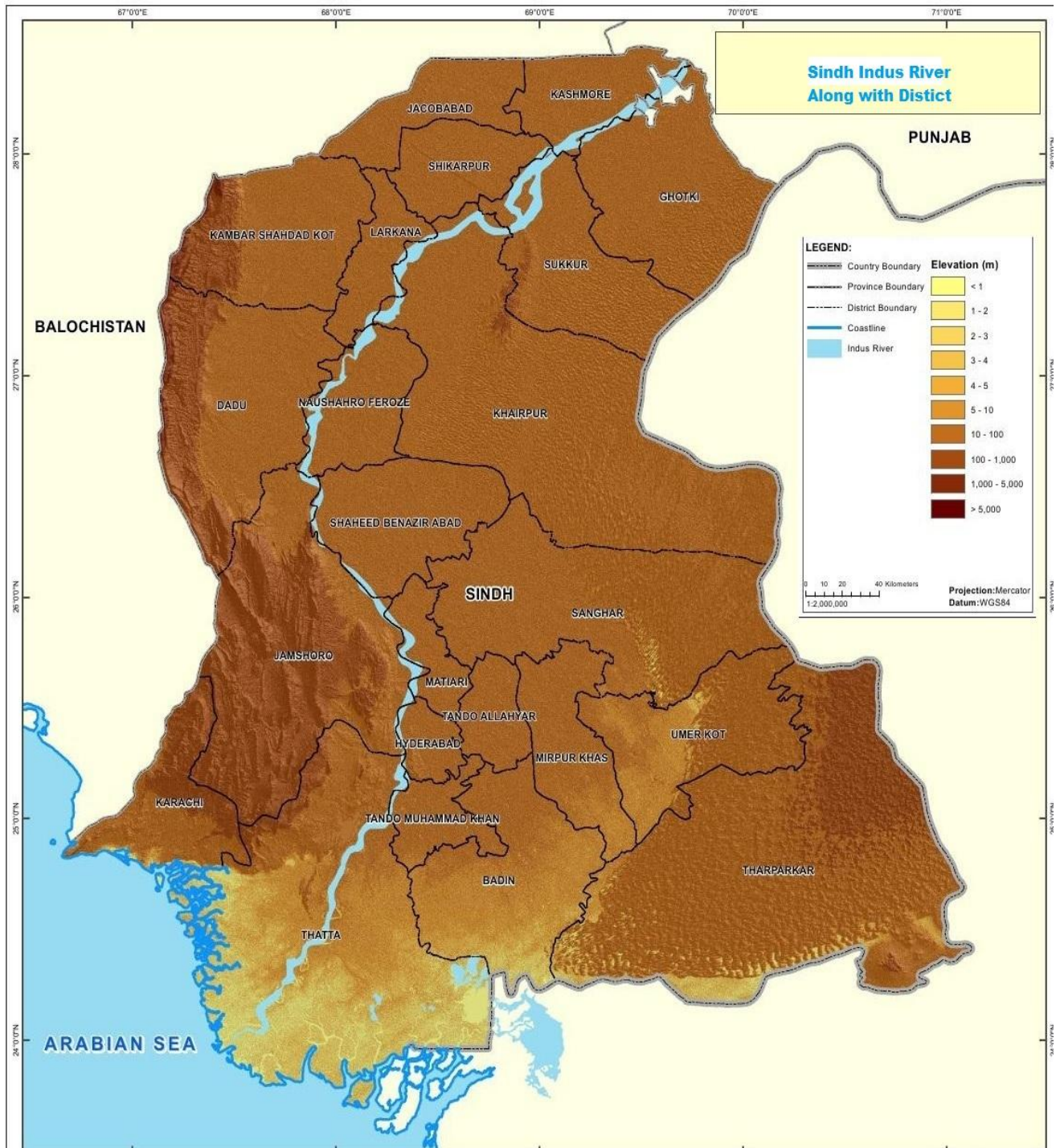
River Indus after receiving water from 5 rivers system causes floods in the Northern and Southern parts of the Sindh Province. The upper regions of the Sindh Province constitute the Districts of Kashmore, Shikarpur, Jacobabad, Larkana and Kambar Shahdadkot on the right bank of River Indus and Ghotki, Sukkur, Khairpur, Naushahroferoze and Shaheed Benazirabad on the left bank of River Indus. These Districts on the right and left of River Indus pose a severe threat owing to passing of River Indus. The districts in the lower Sindh prone to Riverine flooding includes Dadu, Jamshoro and Thatta on the right bank of River Indus and Tando Muhammad Khan, Matiari and Hyderabad. The length of River Indus along the province is 750 kms long.

In addition to Riverine flood threat faced by the Districts of Kambar Shahdadkot and Dadu, they are also vulnerable to hill torrents which cause flash flooding, the early warning mechanism for which is very minimal.

Monsoon hazards in Sindh emerge as a result of heavy precipitation and subsequent flooding along the Panjnad including Indus river and through flash flooding in numerous hill torrents on the Southern part of the Province. The Province is also vulnerable to precipitation generated flash flooding and urban flooding, cloud burst primarily in the cities of Karachi and Hyderabad. In fact historical evidence suggests that natural and manmade disasters exact a significant toll in human lives in Karachi alone. Given the complexity, the simultaneous occurrence of riverine and flash floods, heavy precipitation and cloud burst phenomenon can worsen the impacts of monsoons instigated disasters in province.

2.3 MAP WITH FLOW OF RIVER INDUS ALONG DISTRICT OF SINDH

Fig.1 Flow of River Indus



2.4 CHANGES IN THE RIVER MORPHOLOGY

The unprecedented nature of 2010 Floods caused occurrence of unregulated river flow patterns resulting in widened spans and erosions, at places. During Monsoons these trends are likely to render populations residing close-by at risk; undermining the effectiveness of the protective arrangements; and, risk severance of bridges and communication infrastructure; therefore, river training or regulating river flows to defined channels is considered essential for flood impact mitigation.

2.5 PERFORMANCE OF WATER REGULATORY INFRASTRUCTURE

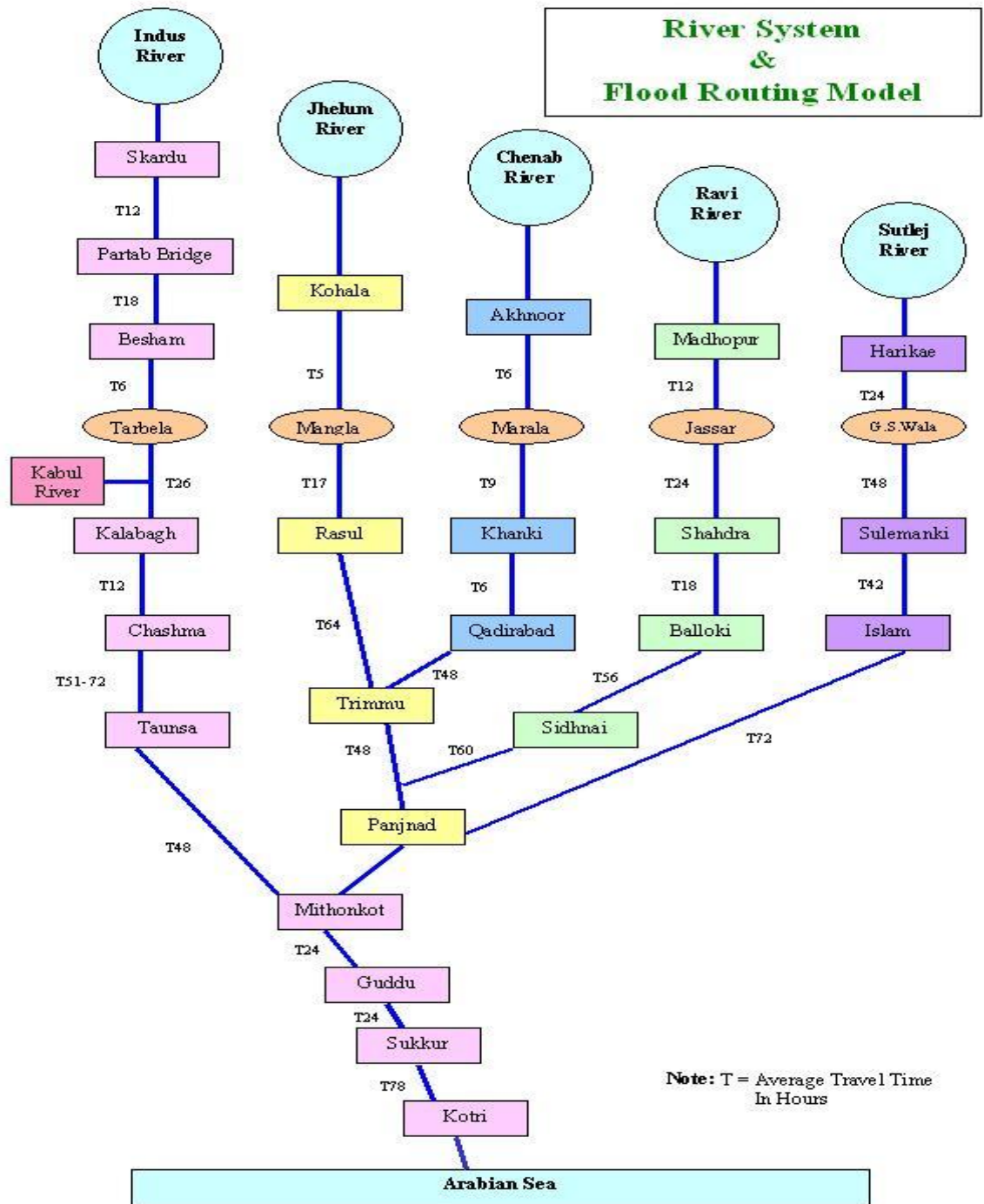
The unprecedented floods of 2010 in addition to their colossal humanitarian impacts exposed the water regulatory infrastructure to tremendous pressures. The water which flowed surpassed the earlier records by manifolds; a detailed comparison is given in the table below. Moreover, the Schematic Model of flood routing of River system also shown below depicts that average travel time between the three hydraulic structures (Guddu, Sukkur and Kotri) is 24 hours; thus necessitating to put in place an effective and prompt decision making.

2.5.1 WATER FLOW COMPARISON

Barrage	Design Capacity (in cusecs)	Maximum Recorded (in cusecs)	Year	2010 Floods (in cusecs)	Comparison with Earlier Record (Ratio)	Comparison with Design Capacity (Ratio)
Guddu	1,200,000	1,199,000	1976	1,148,000	0.96	0.95
Sukkur	900,000	1,166,000	1976	1,130,000	1.295	1.25
Kotri	875,000	980,000	1956	964,000	0.98	1.10

Table 1: Water Flow Comparison

2.5.2 FLOOD ROUTING MODEL



Source: Flood Forecasting Division, Pakistan Meteorological Department

Fig. 2 Flood Routing Model

2.6 LATENT VULNERABILITIES

Some of underlying vulnerabilities which increase the threat of Monsoon hazards in Sindh are chalked as under:

- 2011 monsoon rain induced floods in Southern Sindh, which does not directly fall in monsoon zone, has exposed a large segment of population who were traditionally considered to be safe from adverse effect of monsoon.
- New areas of Eastern Baluchistan and Northern Sindh have been impacted by floods in 2010, 2011, 2012 and 2013 consecutively, thereby compounding their vulnerabilities.
- Population pressures have resulted in encroachments on river flood plains, thereby enhancing risks and vulnerabilities.
- Detailed flood plains mapping covering entire Indus River System, its Tributaries and Nallahs is yet to be done, this has been identified as a priority area in the Provincial Disaster Management Plan, on the basis of which land use planning and demarcation of waterways should be done to reduce risks from flood hazard.
- Widespread Environmental Degradation had reduced the flood water absorption capacities of catchment regions and accentuated downstream vulnerabilities.
- Limited capacity in weather and flood forecasting, particularly for flash floods, necessitates preparedness to meet unpredictable challenges.

- Insufficient surface storages/ reservoirs to manage heavy river flows necessitate more extensive flood protection measures downstream.

2.7 DATA OF HISTORICAL FLOOD EVENTS

The data of losses from floods in Sindh for the past 25 years have been covered in a table attached at Annex-A

2.8 PRELIMINARY WEATHER OUTLOOK – MONSOON SEASON 2014

Pakistan Meteorological Department has issued “Preliminary Weather Outlook for Monsoon 2014 on 2nd May, 2014” which has been reproduced as under:

Pakistan Summer Monsoon Season spans over July to September. As a routine practice, Pakistan Meteorological Department (PMD) issues the Monsoon Outlook around mid June incorporating the dynamics of local, regional and global meteorological parameters up to the end of May each year. However, South Asian Climate Outlook Forum (SASCOF-5) designated by World Meteorological Organization (WMO) has already issued Consensus Statement. Outlook made by this forum and preliminary outlook of PMD are presented below:

2.8.1 SOUTH ASIAN CLIMATE OUTLOOK FORUM (SASCOF-5)

The outlook suggests that below normal to normal rainfall is most likely over South Asia as a whole. Below normal rainfall is likely over broad areas of Western, Central and Southern parts of the South Asia and some areas in the North Eastern-most parts of the region. Normal rainfall is likely over broad areas of North Western and Eastern parts and some

island areas in the Southern most part of the region. It is noteworthy that no part of the South Asia is likely to receive above normal rainfall.

2.8.2 PRELIMINARY MONSOON OUTLOOK BY PMD

The emerging climatic features linked to El-Nino development have fairly large potential to suppress Pakistan Summer Monsoon 2014. According to the preliminary estimates of PMD, the amount of rainfall from July to September may be moderately below normal in Sindh, Balochistan and Southern Punjab while nearly normal rainfall is expected in North Punjab, KP, GB and Kashmir.

2.8.3 OUTLOOK FOR MONSOON SEASON (JULY – SEPTEMBER) 2014

Pakistan Meteorological Department has issued “Outlook for Monsoon 2014 on 16th June, 2014” which has been reproduced as under:

*Pakistan Summer Monsoon rainfall is invariably affected by the global, regional and local climatic conditions prevailing prior to the season. The emerging climatic features linked to El-Nino development have fairly large potential to suppress Pakistan Summer Monsoon “**Analysis of their combined effect indicates that total amount of rainfall averaged over Pakistan during monsoon season (July-September) 2014 will remain slightly below normal, which means that overall availability of water in the country from monsoon rainfall would be satisfactory**”.*

Main features of seasonal outlook are as under:

- *Onset of monsoon is likely to be in the last week of June, 2014 and the rain fall during July will below normal.*
- *Rainfall will increase gradually in August over Northern parts of the country. During August and September, monsoon will remain by and large normal. However, northern parts of the country are expected to receive slightly above*

normal precipitation during the period. An effective management practices may be adopted to fill the main reservoir (s) at optimum level.

- *At occasions, the interaction of easterly and westerly systems may result in heavy downpour causing localized urban / flash flooding.*
- *Monsoon rainfall would be unevenly distributed during July to September.*

2.9. MONSOON 2014 FAILURE

Although SASCOF-5 findings, PMD's preliminary observations and the Monsoon 2014 Outlook have not indicated a dry spell for 2014 which would trigger drought conditions in the province however, if Sindh Province on the whole or its few districts face drought/ semi drought conditions which may involve hydrological and/ or meteorological droughts. PDMA Sindh may roll out its Drought Contingency Plan which would be a separate document covering roles and responsibilities of Government Agencies, Line Departments and Humanitarian Agencies for effective drought emergency, response and rehabilitation for the affected district (s).

2.10. MONSOON 2014 PREPAREDNESS CONSULTATIONS

A number of consultation sessions and coordination meetings were organized at all levels this included meetings by PDMA with all Districts, Line departments, Armed Forces, PMD, Civic Utility agencies etc to review level of preparedness, consult relevant agencies on contingency plans and resolve outstanding issues. These meetings were held in the Head Office of PDMA Sindh which were chaired by Director General, PDMA along with his team.

Moreover, the Minister Relief, Revenue and Rehabilitation in the capacity of Chairman PDMA has started convening meetings at Divisional levels to finalize the monsoon / floods preparedness measures by the district administrations and its allied offices.

In order to further consolidate and coordinate Provincial preparedness for upcoming Monsoon Season, PDMA has organized a one day Provincial Monsoon Contingency Conference in the 2nd week of June, 2014 at Karachi. All relevant Federal and Provincial agencies and stakeholders including Humanitarian Community were invited which shared their views and valuable contributions for evolving an effective and efficient strategy towards mitigation, preparedness and response modalities.

CHAPTER – 3

DIVISIONAL MONSOON CONTINGENCY PLANS

3.1 SCENARIOS

Two Scenarios have been considered for the purpose of calculating caseloads for the Provincial Contingency Plan as under:

3.1.1 LIKELY SCENARIO

While the possibility of Riverine Floods, as per PMD Forecast is fairly low, the likelihood of Hill Torrents, Flash Floods and a freak phenomenon of heavy rainfall within a short span of time cannot be ruled out. Such a Scenario bears potential to adversely impact the some Districts of Sindh Province. Therefore, the likely Scenario is promised on the caseload of 2010, 2011, 2012 and 2013 Floods with requisite cushion to address an unpredictable spike in monsoon rains.

3.1.2 WORST CASE SCENARIO

The worst case Scenario is premised on the worst flood of the Province/ Region which are unprecedented floods and 2011 Monsoon Rains in Sindh.

3.2 OVERVIEW OF DIVISIONAL PLAN

3.2.1 LARKANA DIVISION

Larkana Division is prone to both Riverine and Flash Floods 3 out of 5 Districts .i.e Jacobabad, Kashmore and Kamber are highly prone to Flash Floods due to water gushing from hill torrents of Baluchistan, whereas Larkana and Shikarpur are prone to Riverine floods.



Fig. 3 Map of Larkana Division

The plans anticipated the relief caseload of 3,740,000 population (approximately 623,333 households/families) in worst case scenario in the 5 Districts, while the population of 1,500,000 (approximately 250,000 households/families) is anticipated in likely scenario case of Larkana Division.

District	Likely	Worst
Larkana	18,750	66,667
Kamber	37,500	141,667
Kashmore	43,750	131,333
Shikarpur	31,167	131,667
Jacobabad	56,167	150,000
Total	1,87,500	623,333

Table 2 Likely & Worst Caseload in terms of families with an average of 6 individuals per family.

Early warning system has been specified and safe evacuation sites have been identified along with evacuation plans for vulnerable districts in accordance to their vulnerability. Moreover, an elaborated coordination mechanism has been worked out in which roles and responsibilities of government departments/offices have been identified in details. Thus various committees have also been constituted at district level.

Preparations are based on worst case scenario in the light of experiences and lessons learnt from unprecedented floods 2010 and heavy monsoon rainfalls witnessed in the past.

3.2.2 SUKKUR DIVISION

The entire Sukkur Division is prone to Riverine Floods. All Districts of the Division are highly prone to Riverine floods due to passage of River Indus. 12 points have been identified most vulnerable in Sukkur Division; 2 in Ghotki, 5 in Sukkur, 2 in Khairpur and 3 in Naushehro Feroze.



Fig. 4 Map of Sukkur Division

The plans anticipated the relief caseload of 1,650,000 population (approximately 275,000 households/families) in worst case scenario in the 4 districts, while the population of 900,000 (approximately 112,500 households/families) is

District	Likely	Worst
Sukkur	18,667	37,500
Khairpur	37,500	75,000
Naushahro Feroze	31,250	108,333
Ghotki	25,000	54,167
Total	112,500	275,000

Table 3 Likely & Worst Caseload in terms of families with an average of 6 individuals per family.

anticipated in likely scenario case of Sukkur Division.

Early warning system has been specified and safe evacuation sites have been identified along with evacuation plans for vulnerable Districts in accordance to their vulnerability. Moreover, an elaborated coordination mechanism has been worked out in which roles and responsibilities of Government Departments/

Offices have been identified in details. Thus various committees have also been constituted at District level.

Preparations are based on worst case scenario in the light of experiences and lessons learnt from unprecedented floods 2010 and Heavy Monsoon Rainfalls witnessed in the past.

3.2.3 HYDERABAD DIVISION

The Hyderabad Division is prone to multiple monsoon hazards i.e riverine , flash, urban and LBOD floods.

Fig. 5 Map of Hyderabad Division

- Hyderabad District is prone to both Riverine and Urban Flooding;
- Shaheed Benazirabad is prone to both Riverine and LBOD flooding;
- Dadu and Jamshoro are prone to Flash Flooding;
- Matiari and Tando Muhammad Khan District are prone to Riverine and;
- Low lying areas of Tando Allahyar district is prone Urban Flooding.



The plans anticipated the relief caseload of 3,725,000 population (approximately 620,834 households/families) in worst case scenario in the 7 Districts, while the population of 1,149,294 (approximately 91,549 households/families) is anticipated in likely scenario case of Hyderabad Division.

District	Likely	Worst
Hyderabad	18,750	58,333
Dadu	50,000	150,000
Jamshoro	21,867	62,500
Matiari	5,000	16,667
Shaheed Benazirabad	40,625	150,000
Tando Allahyar	17,807	91,667
Tando Muhammad Khan	37,500	91,667
Total	191,549	620,834

Table 4 Likely & Worst Caseload in terms of families with an average of 6 individuals per family.

Early warning system has been specified and safe evacuation sites have been identified along with evacuation plans for vulnerable districts in accordance to their vulnerability. Moreover, an elaborated coordination mechanism has been worked out in which roles and responsibilities of Government Departments/ Offices have been identified in details. Thus various committees have also been constituted at district level.

Preparations are based on worst case scenario in the light of experiences and lessons learnt from unprecedented Floods 2010 and heavy monsoon rainfalls witness in the past.

3.2.4 MIRPURKHAS DIVISION

The Mirpurkhas division is prone to both Riverine and LBOD floods. The District Mirpurkhas is prone to both Riverine and urban flooding. The Sanghar and Umerkot districts are prone to LBOD flooding.



Fig. 6 Map of Mirpurkhas Division

The plans anticipated the relief caseload of 2,850,000 population (approximately 475,500 households/families) in worst case scenario in the 4 districts, while the population of 936,504 (approximately 156,084 households/families) is anticipated in likely scenario case of Mirpurkhas Division.

District	Likely	Worst
Mirpurkhas	43,750	108,333
Sanghar	75,000	191,667
Tharparkar	28,000	150,000
Umerkot	9,334	25,000
Total	156,084	475,000

Table 5: Likely & Worst Caseload in terms of families with an average of 6 individuals per family.

Early warning system has been specified and safe evacuation sites have been identified along with evacuation plans for vulnerable districts in accordance to their vulnerability. Moreover, an elaborated coordination mechanism has been worked out in which roles and responsibilities of Government Departments/ Offices have been identified in details. Thus various committees have also been constituted at District level.

Preparations are based on worst case scenario in the light of experiences and lessons learnt from heavy monsoon rainfalls of 2011 and 2012.

3.2.5 BHAMBHORE DIVISION

The Bhambore division is a new division recently notified by the government of Sindh. Three districts constitute this new division i.e Thatta, Badin and a newly created Sujawal district. Badin is prone to LBOD flooding, whereas Thatta and Sujawal district are prone to Riverine Floods as well as heavy monsoon rainfalls. In addition to this, the two districts are also prone due to coastal belt, when on



Fig. 7 Map of Bhambore Division

account of natural phenomena, the water level in the river rises due to its non-acceptance by sea during full moon. The same was also witnessed during floods of 2010 and has therefore been considered in context to preparedness and emergency response activities.

The District plans anticipated the relief caseload of 1,850,000 population (approximately 308,334 households/families) in worst case scenario in the 3 districts, while the population of 566,496 (approximately 94,416 households) is anticipated in likely scenario case of Bhambhore Division.

District	Likely	Worst
Thatta & Sujawal	62,500	141,667
Badin	31,916	166,667
Total	94,416	308,334

Table 6 Likely & Worst Caseload in terms of families with an average of 6 individuals per family.

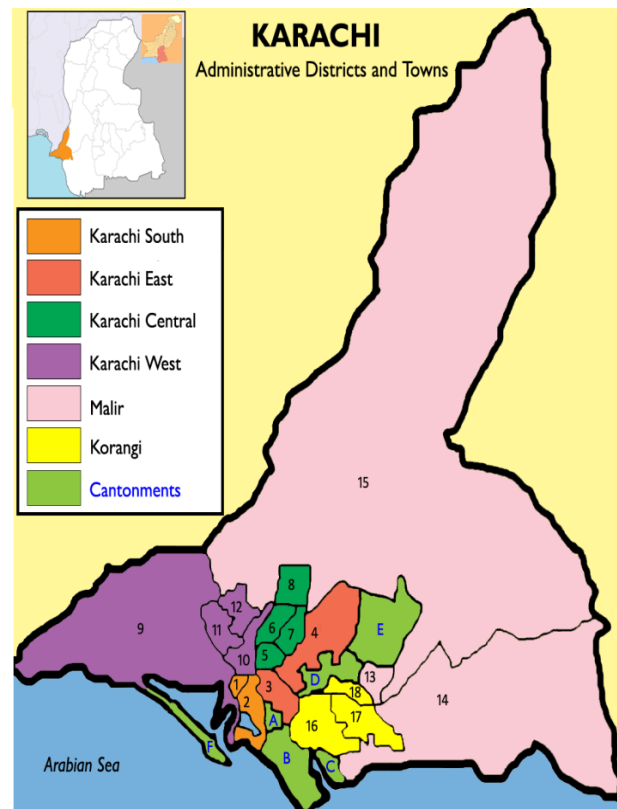
Early warning system has been specified and safe evacuation sites have been identified along with evacuation plans for vulnerable districts in accordance to their vulnerability. Moreover, an elaborated coordination mechanism has been worked out in which roles and responsibilities of Government Departments/ Offices have been identified in details. Thus various committees have also been constituted at District level.

Preparations are based on worst case scenario in the light of experiences and lessons learnt from Heavy Monsoon Rainfalls of 2011 and 2012.

3.2.6 KARACHI DIVISION

The Karachi is the Mega City of Pakistan with a population of approx: 20 million and is the Industrial Hub. The entire Division is to prone Urban Flooding.

Karachi division and surroundings are criss-crossed by many Nallahs which generally flow from North East to South West. These Nallahs act as Natural drains and carry storm water from Kirthar Range down till sea. The major rivers in the area are Malir River in the East and Lyari River in the West, which further have their own small tributaries (Nallahs),



which originates from Khirthar Range, as identified which caused flooding in Karachi Division. Based on the experience of floods of 2013, it can be generally concluded that the Drainage of Karachi is dependent on three Rivers/ Nallahs, which may cause Flooding, due to overflow.

District	Likely	Worst
East	31,250	83,333
West	18,750	50,000
Malir	31,250	83,333
Korangi	21,917	58,333
Central	23,958	108,334
South	34,375	91,667
Total	161,500	475,000

Table 8 Likely & Worst Caseload in terms of families with an average of 6 individuals per family.

3.2.7 Expected Caseload In Likely And Worst Scenario

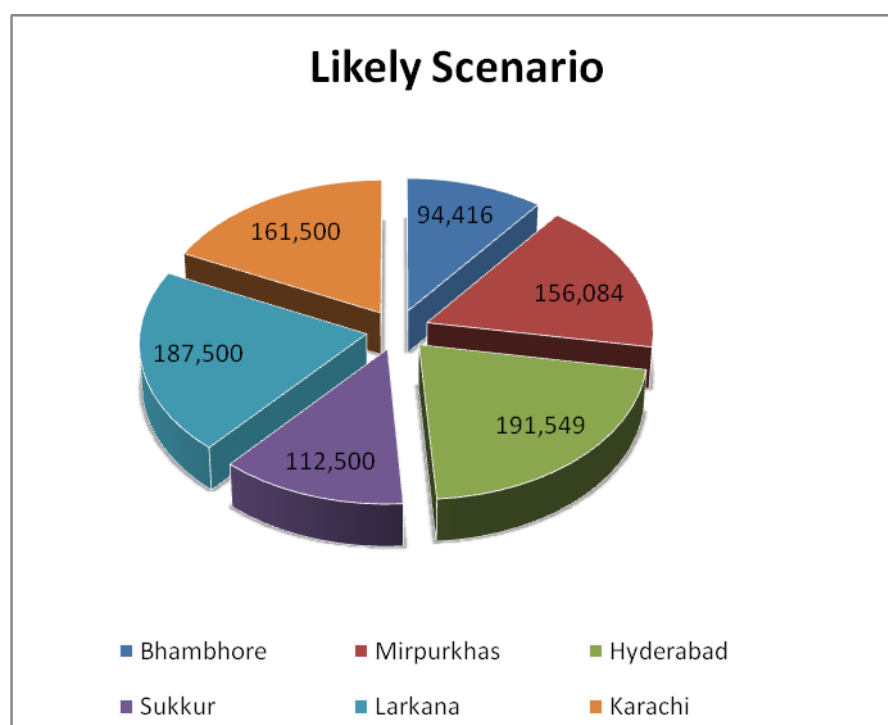


Fig. 9 Caseload in Likely Scenario

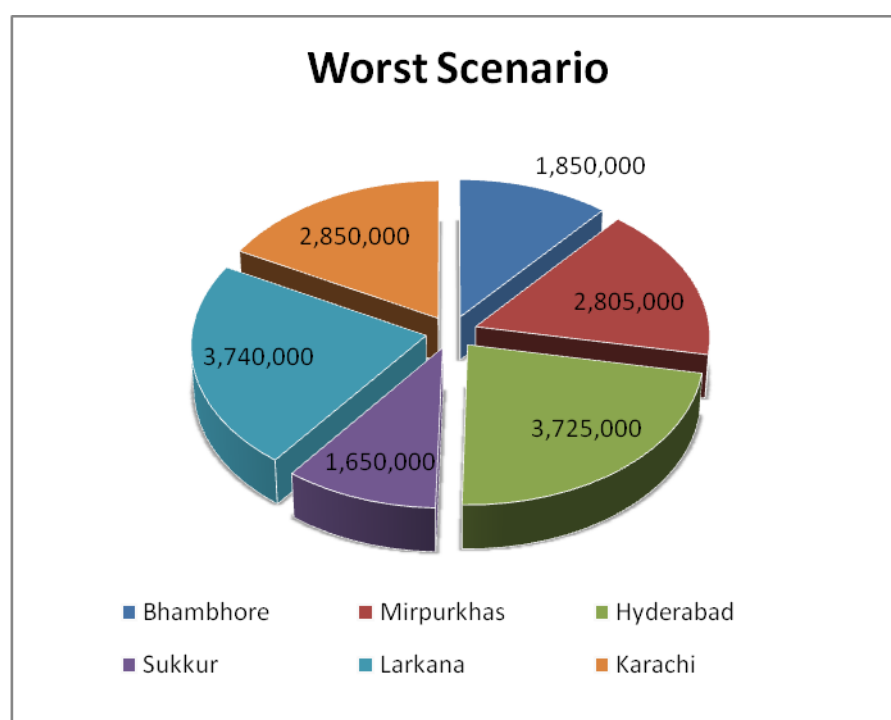


Fig. 10 Caseload in Worst Scenario

3.3 PLANNING PARAMETERS

Preparedness measures have been made/ carried out in the light of following observations

- Possibility of rain induced emergencies, especially due to hill torrents from Koh-e-Suleman cannot be ruled out.
- Level of preparedness of flood protection structure, as indicated by Irrigation Department has improved manifolds.
- Level of preparedness of Disaster Management Authorities, especially of Districts that are vulnerable to floods, have been improved through capacity building programs.
- Division / Districts are expected to meet the needs of their respective caseloads, for the likely scenario from within their own resources. PDMA and other agencies will facilitate in generating additional resources in case the magnitude of disasters exceeds local capacities.

- The contingency planning will cater for the humanitarian needs of the affected population for four weeks i.e the time required to mobilize additional resources, if needed.
- The preparatory measures on DRR, undertaken so far, are likely to considerably reduce / mitigate the likelihood of floods and its adverse consequences.

3.4 STOCKING LEVELS NEED AND GAP ANALYSIS FOR RELIEF

The gap for Relief has been calculated on the basis of Relief Stores available with PDMA on the onset of Monsoon 2014. Following relief stores will be available with PDMA.

3.4.1 LIKELY SCENARIO

Caseload: 903,549 (Households/families)

S. NO.	Items	Available / or will be available before Monsoon	Need	Gap
1	Shelters/ Tents (50% HH)	25,000	451,775	426,775
2	Plastic Sheets (50%HH)	20,000		
3	Food Baskets (100% 4 Weeks)	Nil	903,549	903,549
4	Mosquito Nets (50%)	50,000	451,549	401,775
Total			1,806,873	1,732,099

Table 9 Need & Gap in Likely Caseload Scenario

It may be kept in mind that the caseload is for planning purpose and covers all the 29 districts. In actual situation, we have seen that not all districts get affected, therefore the caseload would be less than the given caseload”

3.4.2 WORST SCENARIO

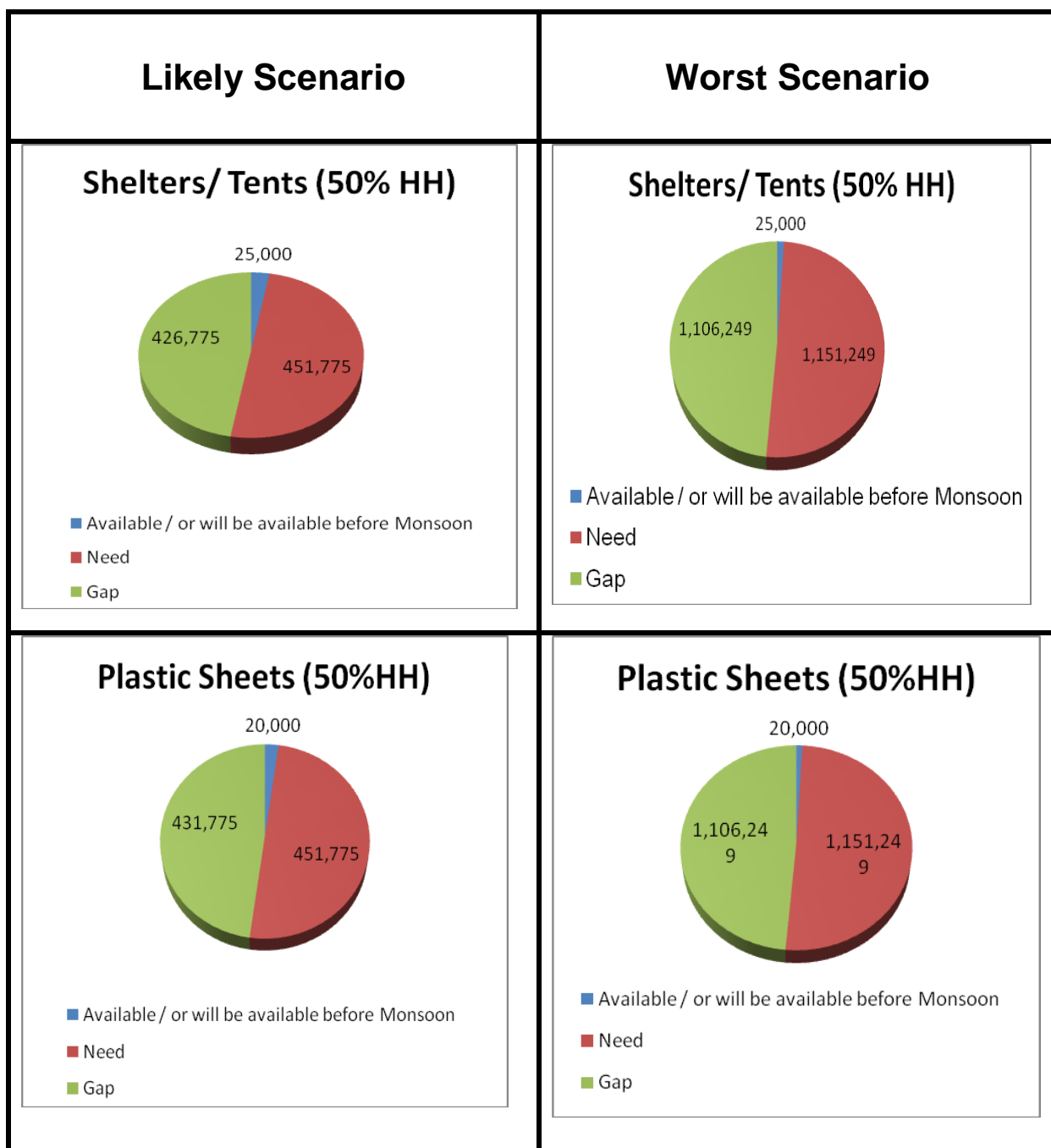
Caseload: 2,302,499 (Households/families)

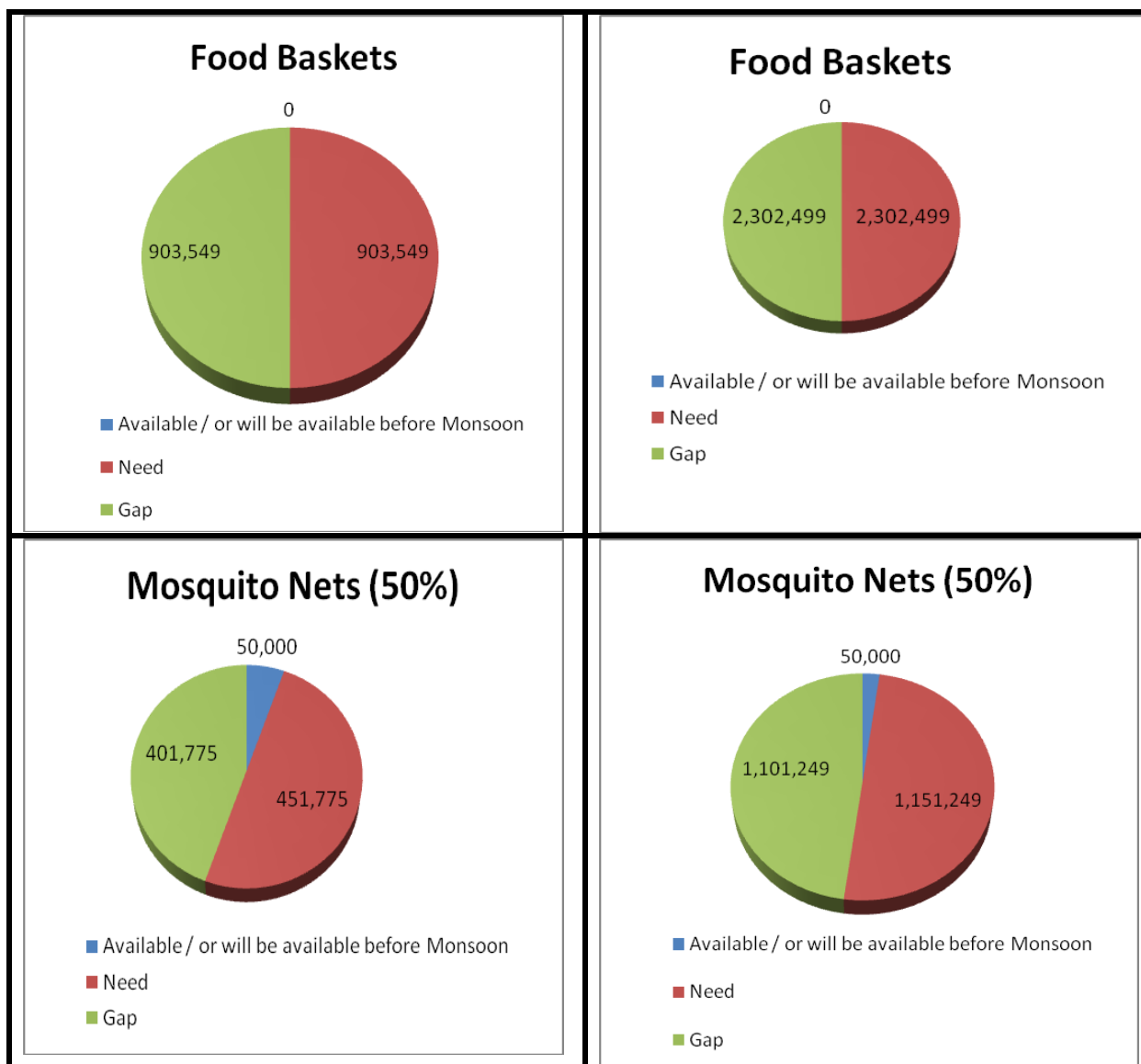
S. NO.	Items	Available / or will be available before Monsoon	Need	Gap
1	Shelters/ Tents (50% HH)	25,000	1,151,249	1,106,249
2	Plastic Sheets (50%HH)	20,000		
3	Food Baskets (100% 4 Weeks)	Nil	2,302,499	2,302,499
4	Mosquito Nets (50%)	50,000	1,151,249	1,101,249
Total			4,604,997	4,509,997

Table 10 Need & Gap in Worst Caseload Scenario

Inventory of stocks available with PDMA and the other relief items / heavy machinery, earth moving equipment held by Districts Administrations are at Annex- B, C and D respectively

Fig. 11 Likely & Worst Scenario





3.5 BROAD CONTOURS OF THE PLAN

Respective DDMAAs, backed by PDMA would be the first responders in case of flood situation.

- Early warning of approaching weather system will be provided by PMD/ FFD and communicated to all concerned by DDMAAs. DDMAAs are expected to translate weather forecast and flood warnings into usable early warning for vulnerable communities and ensure its timely dissemination to all concerned.
- Threatened population will be evacuated by DDMAAs as per prepared plan.
- DDMAAs would be responsible for provision of search and rescue, medical and emergency responses.
- Camps will be established at pre-selected sites by DDMAAs.
- All Division / Districts must be ready to handle the initial caseloads within their own mechanism and resources.
- DDMAAs would be responsible for effective and transparent relief distribution including relief provided by PDMA, NDMA and other Humanitarian Agencies.
- All stakeholders would take necessary actions to facilitate early recovery and rehabilitation of affected population.
- In case the districts fall short of meeting the humanitarian needs, PDMA will assist by making available the required stocks. In case when disaster exceeds capacities of the provincial government, NDMA will be requested

to make available the additional stocks from national reserves, prepositioned across the Country.

- When required, Armed Forces may be requested for assistance by PDMA Sindh at any stage, particularly for rescue, evacuation and emergency relief phases. Thus, the DDMA's will have to submit the request to PDMA for assistance of armed forces in aid of civil administration.
- Special requirements of Aviation / Naval support by any agency will be coordinated by PDMA.
- Resources of Government Departments and Agencies such as, Pakistan Red Crescent Society and domestic philanthropy may be requisitioned, if the intensity of the situation so entails for an effective response.

CHAPTER-4

COORDINATION MECHANISM

PDMA will coordinate with key National Stakeholders including PMD, FFC, Armed Forces, Federal Agencies, DDMA's and Line Departments for management of the entire spectrum of Provincial Disaster Response. System of coordination of PDMA is depicted below.

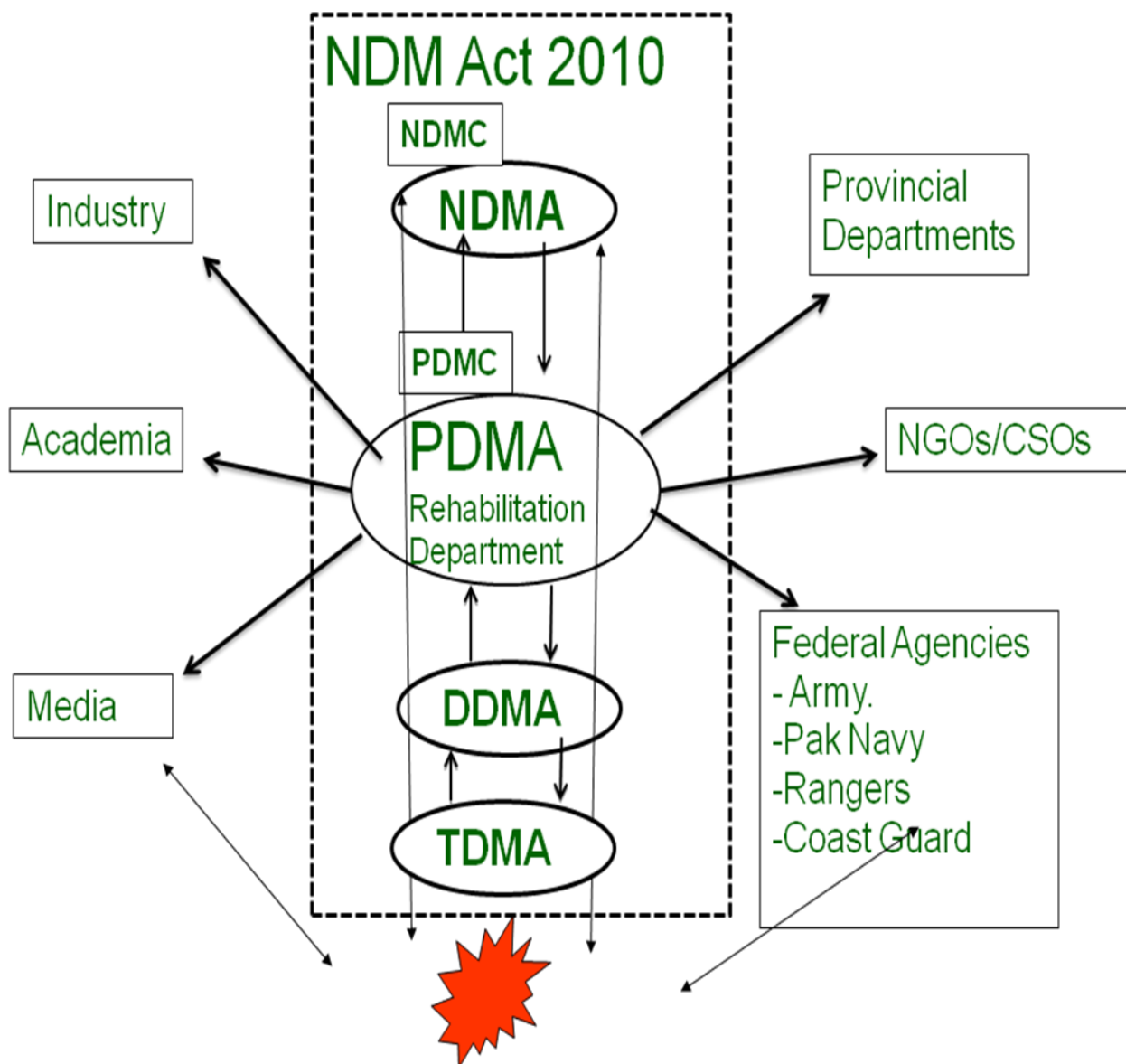


Fig. 12 Coordination Mechanism

4.1 MITIGATION

4.1.1 MINISTRY OF WATER AND POWER

The ministry is responsible for the overall flood management and impact mitigation efforts through its attached departments (FFC, WAPDA, PCIW and IRSA). The Ministry deals with monitoring of preventive and preparedness measures as well as resource allocation for the protection works.

Federal Flood Commission implements Flood Risk Mitigation Projects which include flood protection works as well as flood forecasting/ warning system improvements. As part of preparedness measures for Monsoon Season 2014, FFC has undertaken the following:-

- Countrywide monitoring of flood works.
- Comprehensive Flood Management Plan for 10 years initiated.
- In case of Exceptionally High Floods, parts of the discharges are managed by breaching the bunds on the pre-determined sites for safety of the main Hydraulic Structures (Bridges & Barrages) and main cities.

4.1.2 WATER & POWER DEVELOPMENT AUTHORITY (WAPDA)

WAPDA reinforces floods impact mitigation through operational management of major water reservoir i.e. Tarbela, Mangla Dams and Chashma Barrage. It strengthens national flood early warning system through deployment of flood telemetry system.

4.1.3 INDUS RIVER SYSTEM AUTHORITY (IRSA)

IRSA defines the dam/water storage and release policy as part of its mandate during the Rabi and Kharif season.

4.1.4 IRRIGATION DEPARTMENT SINDH

It undertakes implementation of flood protection works, monitor flow in flood prone rivers and water channels, reinforce floods early warning and execute technical responses, O&M of existing flood protection infrastructure besides restoration and repair of damaged flood protection works.

4.2 EARLY WARNING

4.2.1 PAKISTAN METEOROLOGICAL DEPARTMENT (PMD)

PMD has a broad mandate of supporting agro-based economic activities, air and maritime traffic safety, disaster mitigation efforts and disseminating weather forecast to numerous end users. PMD will ensure the following during monsoon season:

- Inform public on the weather forecast and issue warning in case of potential threat.

- Collect rain data on a regular basis, consolidate and share it with all concerned.
- Disseminate flood information to the NDMA/ PDMA on a daily basis during flood season.
- Share weather forecasts and early warning information with NDMA, F/G/S PDMA, and the Media on a regular basis in the monsoon period.
- Coordinate with FFC, FWC, WPADA, PCIW, FFD, and SUPARCO in the Monsoon period to generate flood warning where wanted.

4.2.2 FLOOD FORECASTING DIVISION (FFD)

FFD is an affiliated organization of PMD. It disseminates flood early warning and river flow updates to relevant National, Provincial and District Governments and National Response Agencies, especially in the context of Monsoon Season.

4.2.3 PAKISTAN SPACE & UPPER ATMOSPHERE RESEARCH COMMISSION (SUPARCO) BROAD

SUPARCO deploys its satellite imagery capacities for disaster impact mitigation and also for early warning of disaster occurrence and trends monitoring. SUPARCO will play the following role during monsoon season:-

- Provide remote sensing and satellite maps before and during disasters in order to show their impact.

- Provide remote sensing and satellite maps for hazard risk zones to enable relevant agencies to take measures for minimizing damage to population and property.
- Assist post-disaster damage assessment.

4.3 RESPONSE AGENCIES (FEDERAL GOVERNMENT)

4.3.1 NATIONAL DISASTER MANAGEMENT AUTHORITY (NDMA)

- National Emergency Operation Center (NEOC) is activated in NDMA, Islamabad for monitoring of the situation and coordination of possible response during monsoon season 2014 on 24/7 basis. The NEOC will always be manned by a Duty Officer who functions under the overall supervision of Director (Response), NDMA.
- Coordinates emergency response of the Federal Government in the event of a National level Disaster through the NEOC.
- Require any Government Department or Agency to make available such staff or resource that are available for the purpose of emergency response, rescue and relief.
- Organize initial and subsequent assessment of disaster affected areas and determine the extent of loss/damage and volume of relief required.

- Coordinate and inform all concerned Department to get prepared for emergency response.
- Coordinate with Armed Forces, INGOs, UN Bodies and Philanthropist Organizations for resource mobilization.
- Mobilize and deploy resources e.g. search and rescue medical teams in the affected areas.
- Supply of food, water, medical supplies and NFIs to the affected population.
- Prepare a transition plan from relief to recovery program.

4.3.2 ARMED FORCES

The Armed Forces mobilize and deploy resources when called upon by District / Provincial / National DMAs and provide assistance in Search and Rescue, Evacuation, Camps Establishment and Management, provision and distribution of relief to the affected populations and provision of emergency medical services. The flood control centers will also be established at Pakistan Army, Pakistan Navy and Pakistan Air Force, which will also share information on resource deployment and flood management with respective PDMAs/ NDMA on daily basis. The summary of flood relief equipment of Government of Sindh available with HQ Corps 5 is at Annex- G

4.3.3 PAKISTAN COAST GUARDS

Pakistan Coast Guards augment coastal search & rescue and relief operations on required basis.

4.3.4 EMERGENCY RELIEF CELL (CABINET DIVISION)

ERC maintains stocks of emergency relief stores and is mandated to compliment National efforts in the area of relief besides coordinating disbursement of compensation for losses on such occasions at federal level. ERC has the 6th Aviation Squadron for rescue and relief operations.

4.3.5 NATIONAL HIGHWAYS AUTHORITY (NHA)

NHA is responsible for building and maintaining highways and motorways in Pakistan. It ensures road access during monsoon season.

4.3.6 PAKISTAN RAILWAYS

Pakistan Railways is an important organ which ensures access during monsoon season. To deal with a possible flood Situation, Flood Emergency Centers will be established as usual in 7 – operating Divisions of Pakistan Railways (Peshawar, Rawalpindi, Lahore, Multan, Sukkur, Quetta and Karachi).

4.4 RESPONSE AGENCIES (PROVINCIAL GOVERNMENT)

4.4.1 PROVINCIAL DISASTER MANAGEMENT AUTHORITY SINDH

Pre-Disaster

- DG PDMA in consultation with Chief Secretary Sindh will be responsible for response & relief operations. Director General PDMA on his behalf will head a Composite Team (comprising representatives of Lead Agencies/ Departments and focal persons of support organizations) to coordinate response & relief operations.
- Provincial Emergency Operation Centre would be made operational during the 2nd week of June 2013, so as, to make all arrangements for receiving forecast data from PMD and its dissemination.
- The PEOC will be functional till the termination of monsoon emergency.
- The PEOC shall receive and transmit flood/ water level information thrice in flood season and on hourly basis during emergency.
- Identification of available resources i.e. machinery, tents etc., and Gaps.
- Contingency planning as to identify role of each stakeholder during emergency.
- Ensuring coordination between line departments & other stakeholders for any emergency, through workshops, trainings etc.
- Assisting DDMA's in provisions of adequate required resources for monsoon season.
- An inventory of NGOs working in these areas will be prepared prior to the crisis, in order to mobilize them quickly in case of emergency.

During-Disaster

- The coordination and collection of information and resources to support disaster/emergency incident management activities.

- The PEOC will be a central coordination, command and control facility responsible for carrying out emergency preparedness and emergency management functions at a strategic level in an emergency situation, and ensuring the continuity of response operations.
- Tents, Plastic Sheets, Mosquito Nets, De-watering Pumps, Water Purifying Filters and Jerry Cans are being procured to be placed at the disposal of DDMAAs.
- The PDMA will arrange the transportation of food and other relief items to the Flood Displaced Persons (FDP) for further distribution. District Administration will be requested to distribute the relief goods.
- PDMA shall undertake need based coordination with all UN agencies and other humanitarian partners to fill in the response and relief gaps before, during and after floods.
- PDMA has coordination with all UN agencies and humanitarian partners to maintain a stock (food and NFI including shelter).
- Prepare daily situation reports and circulate to all concerned as per Annex- F

Post-Disaster

- The PDMA in collaboration with partners will have to closely monitor the situation on regular basis. Logistic arrangement should be done in advance keeping in view the positions available in the case of crises. An initial rapid assessment will be carried out to identify the areas and targeted beneficiaries.
- Continue with relief and early recovery operation till affected people are settled back to their original abode and economic activity is resumed.

4.4.2 DISTRICT DISASTER MANAGEMENT AUTHORITY

- DDMAAs shall activate District Emergency Operation Centers (DEOCs)
- In the event of a disaster, organize emergency response through the District Emergency Operation Center (DEOC)
- Setup early warning mechanisms and dissemination of proper information to public, prepare district level response, plans and guidelines, establish stockpiles of relief and rescue material; provide information to PDMA on different aspects of Disaster Management.
- Inform / update PDMA regarding the overall situation.
- Organize evacuation on priority basis.
- Conduct initial and subsequent assessment of disaster affected areas and determine the extent of loss and damage.
- Collect information on damage status and promptly plan for the resources requirement for relief operation and share it with the PDMA.
- Provide food, drinking water, medical supplies and NFIs to the affected population
- Preferably set up tent cities/ relief camps on open land and provide relief to the affectees in camps (Annex-E).
- Coordinate with PDMAAs to deploy resources for emergency response.
- Mobilize community volunteer groups and civil defence for emergency operations.
- Forward timely situation reports (SITREP) on daily basis to PDMA for its timely dissemination to concerned quarters.
- Ensure registration of all relocated population in the camps and overall affected population on gender segregated basis.
- Prioritize vulnerable segments of society in their relief operations.
- Facilitate early return of relocated population and help in restoring their livelihoods.

4.4.3 HEALTH DEPARTMENT

Pre-Disaster

- Provide specific information required regarding precautions for epidemics
- Establish a health mobile team in district & town headquarter hospital
- Setup an Information Center to collect and share information amongst relevant stakeholders.
- Collaboration with relevant organizations/partner NGOs

During-Disaster

- Providing emergency treatment to the affected
- Provision of First-aid & water testing kits, chloramines and anti-snake venom serum & other emergency support
- Deployment of mobile medical teams & health staff
- Collaboration with all relevant stake holders

Post Disaster

- Establishment of medical camps, vaccination, ensuring safe food & water in camps
- Conduct impact assessment on health, intervene to stop outbreak of diseases
- Rehabilitation of health infrastructure

4.4.3 EDUCATION DEPARTMENT

Pre-Disaster

- Providing the necessary information, training to teachers & students regarding disasters with tips to save their families & themselves during disaster.
- In collaboration with Civil Defence systemize volunteers
- Acknowledge students about Health Precautions

During-Disaster

- Mobilize the human resources for intervention during disaster
- Arrangement for evacuees to setup relief & temporary shelter camps
- Deployment of volunteers for camp management & emergency support

Post-Disaster

- Assessment of damages & needs of affected educational institutes
- Rehabilitation of affected educational institutes
- Continuing Education of children at camps and helping them to recover from shock by providing toys etc.

4.4.5 AGRICULTURE DEPARTMENT

Pre-Disaster

- Assessment of high prone areas and estimation of possible damage
- Create community Seed Bank at UC level

- Regular surveillance of Irrigation water supplies
- Close coordination with Meteorological Department & other stakeholders for weather information

During-Disaster

- Immediate mass awareness and update of situation
- Arrangements for relief & temporary shelter camps in canal rest houses
- Vigilance for protection of Agriculture crops

Post-Disaster

- Assessment of damages & needs of affected crop area and submit to DDMA
- Assistance in repair & rehabilitation of Irrigation Systems.
- Timely compensation to affected farmers
- Mass awareness repairing epidemics & diseases to crops

4.4.6 LIVESTOCK AND FISHERIES DEPARTMENT

Pre-Disaster

- Estimation of possible damage
- Mass Awareness regarding precautions
- Close coordination with Agriculture, Irrigation, Meteorological Department & other stakeholders.

During-Disaster

- Update local communities of ongoing situation.

- Provide livestock vaccination
- Arrangements for relief & transportation of livestock

Post-Disaster

- Assessment & submission of damages & need of affected livestock to DDMA
- Timely compensation to affected livestock owners
- Mass awareness regarding epidemics & diseases to livestock

4.4.7 PLANNING & DEVELOPMENT DEPARTMENT

Pre-Disaster

- Gathering statistical data regarding possible damages & recovery needs from all relevant departments
- Plan & identify potential resources
- Facilitation other department in planning

During-Disaster

- Prepare materials and equipments for emergency response
- Deployment teams to distribute fuels to the affected areas

Post-Disaster

- Gathering statistical data regarding actual damaged & recovery needs from all relevant departments
- Plan & Identify potential resources
- Facilitation other departments in planning and execution of rehabilitation in cost effective manner

- Coordinate with all line departments

4.4.8 REVENUE DEPARTMENT

Pre-Disaster

- Assessment of high prone areas and estimation of possible damage and needs for recovery.
- Arrangement of financial resources.

During-Disaster

- Establish relief distribution centers and accept relief donation/ relief support
- Request assistance from DEOC and coordinating in timely release of funds and submitting financial reports of DEOC

Post-Disaster

- Assessment of damages of Industrial/ Business, Crops and Livestock and Settlement of applicable taxes accordingly
- Support PDMA in conduct of authentic damage assessment and compensation need.

4.4.9 POLICE DEPARTMENT

Pre-Disaster

- Information dissemination through "15 helpline Service" to local residents

- Prepare Contingency Plan, Teams & their training for emergency intervention

During-Disaster

- Rescuing affected, shifting, to hospitals and corpse disposal
- Providing easy access & security to rescue & relief teams.
- Maintain law & order and divert traffic on alternative safe routes as and when necessary

Post-Disaster

- Ensure security to workers of NGOs/INGOs
- Provide security in Un-safe areas
- Facilitation to institutions/NGOs/INGOs which focus on rehabilitation activities

4.4.10 CIVIL DEFENCE

Pre-Disaster

- Information sharing regarding technical and personal expertise with PDMA
- Conduct training for volunteers regarding first aid & other activities
- Effectively train & systemize volunteers and mass awareness regarding necessary first aid-rescue activities

During-Disaster

- Rescue, Evacuation and Deployment of Volunteers
- Communicate to DEO any additional resources required for performing Rescue and Evacuation Activities

- Taking precautionary measures to stop Fire-incidents in camps and perform Fire fighting in emergency

Post-Disaster

- Identify gaps, make future plan to overcome weaknesses
- Assisting District Administration and other Line Departments in Rehabilitation works

4.5 STANDARD OPERATING PROCEDURES (SOPs)

- All the departments shall immediately prepare a comprehensive and up-to-date Contingency Plan for combating expected heavy rains and carrying out the Rescue and Relief work including the details of available staff, vehicles, machinery equipments and other resource in close coordination with PDMA, These all must be kept ready to mobilize / use to combat any emergency during the heavy Rains/Flood-2014.
- The Deputy Commissioners shall keep close liaison with allied departments like Municipal Corporation, Health, Agriculture, Revenue, Irrigation, Works & Services, Education & Literacy Departments & Law enforcement Agencies. Meetings in this regard are to be held on need basis with concerned departments.
- If there is likelihood of heavy rains and flood emergency would be declared in the District and all Government functionaries and NGOs would be kept on high alert.
- Control Rooms would be established at District and Taluka level in the offices of the Deputy Commissioners. Assistant Commissioner, Mukhtiarkars (Revenue) and other all line departments during the Rain/Flood emergency. These shall Control rooms shall function round the Clock.
- The Executive Engineers Irrigation will establish round the clock control rooms in their offices for making liaison with all concerned & activate contingency Plan of the department. They shall identify the vulnerable points of the LBOD Sim-Nalahs / and all other irrigation canals. They will be in touch with PDMA the Meteorological Department & inform the concerned agencies about emergency. They will make special arrangements for watching and patrolling of vulnerable points and ensure that embankments remain in stable condition.

- Immediate arrangements for necessary machinery, sand bags and other material to be used for strengthening of embankments of canals, blocking breach shall be ensured and availability of communication network at all vulnerable points.
- The Executive Engineers Irrigation I LBOD shall ensure regular, timely and proper de-silting of all canals, distributaries, drains, sub-drains.
- The Deputy Commissioners shall ensure activation of Control Rooms already established at each Mukhtiarkar (Revenue) Offices round the clock under the supervision of Assistant Commissioner concerned. They shall also ensure cleanliness at proposed relief camps and also ensure immediate evacuation of people residing in low-lying areas to safer place/ relief camps, if required. He shall also make immediate arrangements for the availability of sufficient quantity of relief Material like food, blankets, tents- plastic sheets etc.
- The Deputy Commissioners shall constitute the Supervisory Committees for relief works at district level.
- The Deputy Commissioner shall nominate the Assistant Commissioner as focal persons to coordinate with the TMAs for disposal of rain water during monsoon season-2014.
- The Assistant Commissioners of the division shall be focal persons in Talukas for the entire operations of rescue and relief. They shall ensure their respective arrangements for tractor trolleys and manpower in coordination with Police Department if needed and mobilize the village staff in the pre-and-post emergency work. They shall also ensure proper distribution of relief material among the actual needy persons.

- The Executive Engineer Drainage Division (LBOD), Irrigation Department shall ensure availability of bulldozers, excavators and earthmoving machines in sufficient number and in proper working and ready to use condition in case of emergency.
- The Director Agriculture shall make arrangement for protection of standing crops from damages and diseases that may cause from the stagnant rainwater in the fields. He shall manage required machinery from mechanical wing.
- The Deputy District Officer, Animal Husbandry Livestock and his staff shall ensure safety of livestock from flood diseases and losses and Veterinary Officers shall ensure regular and timely vaccination of cattle in the districts. They shall make all necessary arrangements for fodder for the livestock to be shifted from marooned areas.
- The Deputy Controller, Civil Defence ensure the enrolment of volunteers as early as possible in order to avoid any annoying situation in emergency. He will continuously remain in touch with weather forecast and meteorological departments and will make arrangements for warnings in emergency situation through sirens, loudspeakers and media at Taluka level. He shall ensure presence of the Razakars / volunteers and scouts for rain relief / rescue activities in case of any emergency.
- The Deputy Director Food shall ensure availability of sufficient stock of wheat and other grains and shall coordinate with Deputy Commissioners for supply of ration/ food grains from local Food Grains dealers in case of need.
- The Executive Engineer K-Electric / HESCO / SEPCO, shall ensure that no case of electrocution occurs due to negligence of his department and no loose wires are suspended from the electric poles. In case of any breaking of live electric wires immediate steps shall be taken for repair.

- The Divisional Engineer Telephone, ensure full function-ability of telephones all over the district and provide assistance to all departments on demand at the, time of need. The Zonal Manager Sui-Southern Gas company ensure continuous supply of gas and proper safety of gas lines throughout its network in the districts of this division. He shall ensure immediate repair work in case of any damage to the gas lines.
- The Deputy Commissioners shall ensure mobilization of the NGOs and business community in the rescue and relief activities in case of emergency and shall depute volunteers on different emergency tasks.
- The Regional Director, Information shall keep close liaison with all control rooms of the division to provide correct and exact information to media regarding emergency. He shall also arrange briefings about the latest situation in case of emergency.
- The Red Crescent Society and other welfare associations and NGOs of the district shall provide food packets and other required material to the affected persons in relief camps in case of emergency.
- Proper arrangement for lifting of trees fallen due to heavy rain and gusty winds from the main Highways / Roads shall be made by the Executive Engineer, Provincial. Highways department.
- The incharge Utility Store Corporation shall ensure the availability of sufficient stock of edible items in case of need.
- The Revenue Department shall also conduct the survey of any loss of life houses, cattle, standing crops and other infrastructure after the heavy rains/floods-2014. In case of the highest degree of emergency, Pakistan Army may be requested for helping the district Administration in rescue and relief Operations.

4.6 IMPORTANT CONTACT NUMBERS

They are annexed at G.

**FLOOD STORES/HEAVY MACHINERY /
DEWATERING PUMPS AVAILABLE WITH DDMAS**

Annex – B

Division	MACHINERY								
	Bulldozers/ Dozer	Dumpers	Excavator	De-Watering Pumps	Fire Engine/ Tender	Tractors Trolleys	Boats	Ambulances	Vehicles/ Buses/ Trucks /Vans
Sukkur	32	-	15	140	41	61	218	-	-
Larkana	31	32	09	23	20	28	52	24	40
Mirpurkhas	21	-	-	254	27	45	08	66	06
Hyderabad	07	-	-	201	-	-	24	-	75
Karachi	02	232	5	-	100	190	-	648	33
Bhambhore	-	-	-	28	4	10	102	27	155
Irrigation	19	20	82	-	-	-	-	-	-
W&S	-	02	-	-	-	-	-	-	-
Agriculture	92	-	-	-	-	-	-	-	-
Total	204	286	111	646	192	334	404	765	363

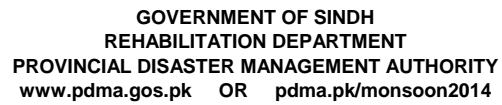
DEWATERING PUMPS OF PDMA AVAILABLE WITH DIVISIONS

Annex – C

S. No.	Division	No. of De-Watering Pumps
1	Karachi.	4
2	Hyderabad	71
3	Mirpurkhas	24
4	Sukkur	8
5	Larkana	5
6	Bhambhore	27
Total		139

DETAILS OF RELIEF CAMPS**Annex-D**

S. No.	Division	District	Number of Relief Camps
1	Hyderabad	Hyderabad	64
2		Shaheed Benazirabad	36
3		Dadu	89
4		T.M Khan	30
5		Tando Allahyar	94
6		Matiali	23
7		Jamshoro	43
8	Mirpurkhas	Mirpurkhas	263
9		Umerkot	45
10		Sanghar	154
11		Tharparkar	93
12	Sukkur	Sukkur	16
13		Khairpur	10
14		Ghotki	20
15		Naushehro Feroze	17
16	Larkana	Larkana	17
17		Shikarpur	12
18		Kamber	07
19		Kashmore	11
20		Jacobabad	19
21	Bhambhore	Sajawal	40
22		Thatta	29
23		Badin	13
24	Karachi	South	17
25		Malir	09
26		West	42
27		Korangi	39
28		East	15
29		Central	15



SUMMARY OF LOSSES / DAMAGES DUE TO RAIN / FLOOD - 2014

[illegible]

FLOOD STORES WITH HQ CORPS 5

Ser	Items	State			Loc		
		Held	RA*	SA*	Upper Sindh	Lower Sindh	Karachi
1.	Fiber Glass Boats	130	20	110	18	80	32
2.	Out Board Motors	199	19	180	62	104	33
3.	Life Jackets	1792	16	1776	956	256	580
4.	De-Watering Pump	115	-	115	13	57	45

*** RA – Repairable**

*** SA – Serviceable**

FLOOD STORES WITH HQ CORPS 5

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