

# National Monsoon Contingency Plan *July-September 2012*



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National Disaster Management Authority,  
Ministry of Climate Change,  
Government of Pakistan



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## Message from the Minister



Monsoon season has immense importance for Pakistan's overall productivity and economy, as being an agricultural country, this season brings rainfall which is crucial for crops, raising of ground water table and filling our water storage reservoirs. This also has the potential of causing widespread damages due to flash and riverine flooding in the valleys and plains of Pakistan.

Due to impact of climate change phenomenon, we have been facing hydro-meteorological hazards during monsoon season. However, the frequency and magnitude of such disasters have significantly increased; particularly the monsoon of previous two years has been devastating with super floods in 2010 and unprecedented rains / floods in 2011.

The democratic government had to divert all available resources to alleviate the sufferings of its people and also to reconstruct critical infrastructure in the country, at the cost of achieving new development. Therefore, the Government assigned top priority to better preparedness and elaborate contingency planning this year, with a view to reduce risks and respond well to any disaster situation.

We started consultations for preparedness and contingency planning at all provincial / regional levels since November, 2011. The respective PDMA's steered and facilitated the process at district as well as local levels.

The Prime Minister chaired two high level meetings of federal and provincial Governments and related departments on 13th March, 2012 and 2nd July, 2012, wherein overall level of preparedness by all concerned was reviewed. The Prime Minister took some important decisions and conveyed instructions for further augmenting precautionary measures.

I am happy to note that comprehensive contingency plans at national, provincial / regional and district levels have been prepared and finalized. I hope that the relevant authorities will remain vigilant in monitoring the situation, continuously work for updating their plans and emergency stocks; and responding to any disastrous situation in the most befitting manner.

I feel confident that owing to keen interest, patronage and guidance from political leadership, our people and national institutions are well prepared, this year, to face challenges and show resilience.

**Rana Muhammad Farooq Saeed Khan**  
Minister for Climate Change

## Planning for Preparedness, Response and Resilience



It gives me immense satisfaction that National Monsoon Contingency Plan-2012 has been prepared with a bottom-up, consultative and participatory approach. This document provides a run-down of Monsoon Hazards, Vulnerabilities, Resource Mapping and Gap Analysis, keeping in view worst-case scenario for Monsoon season- 2012. I appreciate that Governments of all the four Provinces, State of Azad Jammu & Kashmir, Gilgit-Baltistan and Regional Authorities of FATA as well as Federal Organisations / Departments shared their Contingency Plans /State of Preparedness with other stakeholders during consultative meetings initially

arranged at provincial headquarters which culminated in meetings / conferences organised by NDMA in Islamabad.

The role of all the stakeholders especially Pakistan Meteorological Department (PMD) is very crucial in the entire planning process. According to seasonal forecast issued by PMD, there is likelihood of +5 to +15 above normal rainfall during monsoon season-2012. However, there may be chances of erratic heavy down pour in isolated places and the chances of floods in selected areas cannot be ruled out. It is, therefore, imperative to get ourselves prepared for the worst-case i.e. combination of floods 2010 and 2011. For the purpose, all the provincial / state / regional governments, besides taking other preparedness measures, may also allocate necessary funds for disaster management. Moreover, there is dire need to strengthen the Early Warning Systems by utilizing conventional knowledge and to sensitize community by launching mass awareness campaigns for taking precautionary measures in case of heavy rains especially people who are settled in catchment areas.

The NDMA, since its inception, has been endeavoring to build the capacity of the disaster managers at district / provincial level, however, there still remains enough to be done in future. NDMA is determined to keep itself abreast of the knowledge, skills and developments in rapidly changing climate.

A handwritten signature in black ink, which appears to read 'Zafar Iqbal Qadir'. The signature is written in a cursive style.

**Zafar Iqbal Qadir**  
Chairman NDMA



# Contingency Planning

## Planning Process

The NDMA spearheaded the planning process at national level and provided an overall guidance to all provincial / regional disaster management authorities on how to involve all relevant stakeholders, particularly at the field level in a comprehensive consultation process with a view to analyze and determine their respective threats and vulnerabilities, map and organize corresponding available resources, fill the gaps where possible, define and determine effective coordination mechanism, and give roles and responsibilities to each of the stakeholders in contributing to a holistic response when needed.

## Stakeholders Consultations

In November, 2011, the National Disaster Management Authority keeping in view the multifaceted challenges of climate change and corresponding resources available launched a vigorous campaign of awareness raising and provincial level broad based consultation process. These consultations were aimed at creating an understanding for multi-hazard contingency planning process with specific focus on monsoon 2012 CP with bottom-up approach. During the process different capacity building sessions were also arranged. Nine provincial and regional workshops were organized as part of the consultative process, which was led by NDMA and respective PDMAs/regional DMAs.



## Reviewing Preparedness

A number of high level meetings have been held at all the four provincial headquarters to take stock of the preparedness measures, consult relevant agencies on contingency plans and resolve outstanding issues. The meeting for KP and FATA was organized on May 15, 2012 at Peshawar, the meeting for Balochistan on June 13, 2012 at Quetta, for Sindh on June 14, 2012 at Karachi, while the meeting for Punjab Province was held on June 23, 2012 at Lahore.

Similarly high level consultation at federal level were organized which included a

meeting chaired by the Prime Minister to review the State of Preparedness for monsoon season on March 13, 2012 at Islamabad. In order to review the latest status of monsoon preparedness and sharing of the contingency plans by the provincial and regional DMAs, respective federal departments and UN agencies, NDMA organized meetings on June 15, 2012 and June 26, 2012,



Assigning top priority to the preparations made in the context of 2012 monsoon, Raja Pervez Ashraf, the Prime Minister of Pakistan was pleased to chair a

meeting in the Prime Minister's Secretariat Islamabad on July 2, 2012. The meeting reviewed the nationwide preparation for monsoon season 2012. NDMA gave a detailed presentation on National Monsoon Contingency Plan and level of preparedness.

Chief Secretaries of the respective provinces/ regions also updated the national leadership on the level of preparedness for monsoon season 2012. The Federal Secretaries/Additional Secretaries /Heads of Finance Division, Economic Affairs Division, WAPDA, Pakistan Railways, NHA, Cabinet Division, PMD informed the meeting about their respective preparedness interventions. The Prime Minister was pleased to take important decisions and gave directions to all concerned for ensuring

## Weather Outlook-Monsoon 2012

*“According to the Pakistan Meteorological Department, the Summer Monsoon Outlook 2012 for Pakistan suggests that there is a strong likelihood that total amount of precipitation in Pakistan during monsoon season 2012 (July-September) will be +05 to +15% above normal of the long term average. However, erratic spread of monsoon on temporal and spatial scale is likely to be a prevalent feature; as such the possibility of very heavy localized rainfall, at times resulting in flash flooding, may not be ruled out. Localized rainfall events may cause flash flooding over the hill torrents of the Suleman Range & Rod-Kohi, Rajanpur, D. I. Khan and D. G. Khan. Snow melt contribution to reverine flooding will be minimal due to below normal temperatures in northern areas and frequent passage of westerlies”.*



## Provincial / Regional Plans

Provincial / Regional contingency plans have been prepared by the respective governments and published as public documents. Copies of these plans are available on the websites of NDMA and respective provincial / regional DMAs.

Some of the salient features of Provincial / Regional level of preparedness and Plans formulated through their respective contingency plans are given as under:

### Balochistan

- Preparation based on worst case scenario of the experience of Yemyin Cyclone 2007 in Balochistan;
- Anticipated relief caseload of 630,000 population (84,000 households/families) in worst-case scenario spreading over 12 districts;
- Identified gap of shelter for 69,617 families;
- Out of 30 districts of Balochistan 12 districts have been identified as the most vulnerable to monsoon hazards;
- Outlined the coordination mechanism, roles and responsibilities of different Govt. departments and the SOPs for response mechanism;
- Mapping of the available resources for their possible deployment during the disaster situation;
- Highlighting issues / challenges that impede risk reduction such as encroachments on flood plains, limited design capacity of critical road bridges , inadequate forecasting capacity of PMD, poor management of cross border irrigation system particularly Tori Bund, lack of capacity in DDMA's, nonavailability of timely resources, weak data management at district level;
- Recommendations for regular maintenance of irrigation infrastructure/ Protection bunds, strengthening of Tori Bund in Sindh as part of on-going restoration work, relocation of breaching sections, enhancing capacity of PMD for extended weather radar coverage, capacity building of DDMA's / PDMA and provisioning of roles and responsibilities of Divisional Commissioners in NDM Act 2010.

**Note:** The above mentioned salient features have been derived from the PDMA Balochistan's Contingency Plan for Monsoon Season-2012 and PDMA's briefing to all stakeholders on 15th June 2012, at Islamabad.

# Khyber Pakhtunkhwa


Preparedness on the basis of floods-2010 experience and identification of the following challenges:

- inadequate flood protection arrangements;
- inadequate flood early warning arrangements;
- encroachments and intrusion of population along Panjkora, Swat and Kabul rivers, partly along Indus river and the flood prone hill torrents in the north;
- lack of monsoon preparations and coordination (Provincial Departments and Districts, nonobservance of early warnings by general public;
- 30-70 % reduction in water storage facilities in KP mainly due to silting, thus reducing their flood impact mitigation capacities;
- The regulatory facilities i.e. (Munda and Amandara Headworks on Swat River) sustained damages in 2010 floods and presently are being rehabilitated despite that the Munda Head works has been restored partially, with enhanced capacity of 275,000 cusecs.

Implementation of certain flood protection works by the province, particularly restoration of damaged infrastructure in the wake of floods of 2010. The details are as under:

- a) 22 Schemes worth Rs 1.6 billion completed;
  - b) 39 Schemes worth Rs 3.986 billion are in progress;
  - c) Leftover Schemes 299 worth Rs 5.342 billion;
  - d) Restoration work on Amandara Head Works is almost complete;
  - e) Restoration work on Kurram Ghari Head Works is almost complete;
  - f) Civil Work of 6 out of 8 bays of Munda Head Works are complete; and
  - g) 5 out of 8 gates in Munda Head works have been installed.
- Anticipated relief caseload of 191,660 households for 2012, on the basis of medium impact floods;
  - Requirement of a sum of Rs. 1,022.49 million to cater for the anticipated affected households;
  - Recommendation to enhance DRM investment & DRR Mainstreaming, creation of independent posts of DDMOs, increasing the capacity of PMD by installation of Radar at Cherat, Flash Flood Forecasting Center for Kalpani Nullah, Mardan and Flash Flood Warning Centers for vulnerable areas;
  - Recommendation of modeling of river catchments to translate precipitation into run-off and river zoning for the identification of flood prone areas.





The Irrigation Department of Khyber Pakhtunkhwa has spent Rs.587.54 million on the strengthening and reinforcement of the water reservoirs has installed 138 gauges and has improved the rating curves for obtaining accurate data of water flows. Additionally, the irrigation department has provided Wireless Communication System to improve communication for better Early Warning in case of rivers overflow. The Master Planning of major rivers/ nullahs of Khyber Pakhtunkhwa is another step taken by the Irrigation Department which will ultimately lead to reduce disaster risks.

**Note:** The above mentioned salient features have been derived from the PDMA Khyber Pakhtunkhwa's Contingency Plan for Monsoon Season-2012, and PDMA's briefing to all stakeholders on 15th June 2012, at Islamabad.

## Punjab

Salient features include:

- ❑ Preparedness and contingency plan based on experience of floods- 2010;
- ❑ An elaborate Command, Control and Communication (3C) structure which includes evacuation to be executed by Rescue 1122/ Police/ Civil Defense;
- ❑ The management of relief to be carried out by the departments of Health, Social Welfare, Transport, and Construction & Works Department (C&W).
- ❑ Continuous monitoring of vulnerable areas by offices of Meteorological Department, Punjab Irrigation department, Water and Sanitation Authority (WASA) and WAPDA;
- ❑ Public Communication and Media management to be conducted by PDMA & Information Department of Punjab.
- ❑ Other measures taken and reported by the Government of Punjab in high level meeting on 2nd July 2012 include:
  - Allocation of Rs. 287 million for strengthening of PDMA, Punjab;
  - Allocation of Rs. 2 billion for strengthening of all embankments in Punjab and Rs. 2 billion for Water & Sanitation Authority (WASA) for effective management of urban sanitation and sewerage of water;
  - Completion of all bunds requiring restoration after the floods 2010 including Nawabpur and Akbar Bund;
  - Removal of all encroachments after the floods 2010. An amount of Rs. 2.8 billion allocated for rehabilitation of roads and infrastructure has been spent 100%;
  - Punjab Government expects expeditious work on some projects to be implemented by NHA.

- Vaccination of livestock and has procured “Wanda” for all districts as part of the contingency planning;
- Procurement of required stocks of medicines and sites for establishment of medical camps, during possible emergency situation, have been identified as part of Health contingency planning;
- Procurement of relief equipment including boats and dewatering pumps and their placement at the disposal of Rescue Services and concerned district administrations;
- Shifting of all wheat stocks to safe places and availability of ample stocks of food;
- Allocation of 250 bulldozers and earth moving machinery out of 450 units to vulnerable districts;
- De-silting of about 6,000 kilometers of Drains including Lai Nullah in Rawalpindi.

Major challenges faced by the province include:

- Early rehabilitation of main road link breaches;
- Mitigation of hill-torrent floods through construction of dams or provision of funds for carrying out water;
- Timely and correct information regarding River Flows;
- Provision of flash flood forecasting and early warning systems on the pattern of Lai Nullah at vulnerable places on Kaha and Vidore Hill torrents in D.G.Khan area.

**Note:** The above mentioned salient features have been derived from the PDMA Punjab's Contingency Plan for Monsoon Season-2012, Punjab's briefing at the high level meeting in Prime Minister's Secretariat on 2nd July 2012, and PDMA's briefing to all stakeholders on 15th June 2012, at Islamabad.

## Sindh

Salient Features include:

- Preparedness and for monsoon season 2012 based on the lessons learnt from floods 2010 & rains of 2011 and contingency plan for three scenarios. Moreover PDMA Sindh has identified about one million population at risk in case of flood in river Indus/ flash flood from Balochistan;
- Identification of 16 out of 27 districts, as highly prone to riverine floods, while five districts i.e Dadu, Jacobabad, Jamshoro, Kamber and Larkana as prone to flash floods;

- Identification of 596 safe sites for establishments of relief camps including government schools.
- Left-Bank Outfall Drain (LBOD) having a length of 133 miles and design capacity of 4,000 cusecs passes through Districts of Shaheed Benazir abad, Sanghar, Mirpur Khas, Badin, Tharparkar (Mithi) and umerkot, making all these districts highly vulnerable to heavy rains;
- Identification of vulnerable irrigation points in the province;
- Identification of districts of Karachi, Hyderabad, Shaheed Benazirabad, Sanghar, and Mirpurkhas as vulnerable to urban flooding.
- Formation of District & Taluka Committees for Risk Management, Rescue, Evacuation, Relief, Vigilance, Transport, Machinery, Health, Sanitation, Food, Veterinary, Hygiene etc;
- Preparation of inventory of available resources/equipment (both at the district level & privately held) like Tractors, Trolleys, Bulldozers, Dewatering Machines Excavators etc.;
- Roles and responsibilities of different departments and response agencies;
- Mapping of all available resources including tents, plastic sheeting, mosquito nets, blankets, dewatering pumps, earth moving machinery, boats etc has been done. For example PDMA has identified requirement of tents/tarpaulin of around 130,000 units.

The challenges being faced by the Province of Sindh include:

- In-sufficient flood-protection infrastructure on the Indus river system;
- In-adequate protective infrastructure;
- Lack of integrated flood management;
- Lack of awareness among vulnerable communities regarding monsoon hazards/responses;
- Deteriorating security situation in many monsoon prone regions.

**Note:** The above mentioned salient features have been derived from the PDMA Sindh's Contingency Plan for Monsoon Season-2012 and PDMA's briefing to all stakeholders on 15th June 2012, at Islamabad.

## The State of Azad Jammu & Kashmir (AJ&K)

Salient features include;

- Limited capacity due to financial constraints, while faced with grave challenges;
- Proposal for allocation of funds to the tune of Rs. 20.00 million, en-block, by Federal Government as revolving fund to cope with any emergency in the 2012

monsoon;

- Request to the National Highway Authority (NHA) for clearance of roads from Kohala- Chakothi and Muzaffarabad-Neelum.
- Suggestion that Pakistan Army may provide logistic support to SDMA in case of any emergency;
- Overall anticipated relief case load of 2,500 households/families for AJ&K during the monsoon season of 2012.


**Note:** The above mentioned salient features have been derived from the SDMA, State of AJ&K's Contingency Plan for Monsoon Season-2012, and SDMA's briefing to all stakeholders on 15th June 2012, at Islamabad.

## Federally Administered Tribal Areas (FATA)

Salient features include;

- Preparation of Monsoon Contingency Plan, 2012 on the worst case scenario of floods 2010 experience;
- FATA is primarily prone to flash floods during monsoon season;
- The Plan includes an operational manual that provides mechanism for monsoon response, analyze the preparedness level, identify gaps and needs, departmental roles and responsibilities for effective coordination, mechanism for early warning system, resource identification, capacity analysis, funds allocation/generation through FDMC forum (Fata Disaster Management Commission) etc.
- The expected caseload for FATA as mentioned in their plan is estimated at 537,030 people or 59,669 households.
- The total requirement of relief items is 9,945 tents, 7,710 metric ton food items, 8 million liters clean drinking water, and miscellaneous NFIs including kitchen kits, tarpaulin, and jerry cans etc.
- As part of flood protection and preparedness measures six flood protection projects worth Rs. 29.718 million have been approved and are being considered for implementation. While nine flood protection projects worth Rs. 33.999





millions have been taken up by DDWP for reconsideration. Moreover, five more projects worth Rs. 4,216 millions have been proposed by the irrigation department for approval and implementation in future.

**Note:** The above mentioned salient features have been derived from the FDMA, FATA's Contingency Plan for Monsoon Season-2012, and FDMA's briefing to all stakeholders on 15th June 2012, at Islamabad.

## Gilgit-Baltistan

Salient features include;

- GBDMA has prepared its Contingency Plan on the basis of lessons learnt from Floods-2010.
- The GB Government has undertaken the following pre disaster measures:
  - Rehabilitation of power stations in the nullahs;
  - Rehabilitation of community infrastructures like link roads, water supplies, water channels etc;
  - Protection to the private and Government installations;
  - Rehabilitation of water channels and protective bunds in the nullahs;
  - River bank protection;
  - Dissemination of information to the population situated on adjacent sides of Nulluhs and river banks;
  - Dumping of adequate supplies at strategic locations for utilization in case of any emergency;
  - Defining the roles and responsibilities of different departments, NGOs;
  - Various challenges/bottlenecks faced in disaster preparedness such as lack of capacity of departments both in structural and non-structural terms;
  - Non-existence of Search and Rescue Team;
  - Poor oil storage capacity of PSO;
  - Non-availability of professional assessment experts in DDMA's;
  - Lack of resources to establish a proper Disaster Resource Management (DRM) Center at DDMA level;

**Note:** The above mentioned salient features have been derived from the GBDMA, Gilgit- Baltistan's Contingency



## Islamabad Capital Territory

The Administration of Islamabad Capital Territory (ICT) has also devised its Monsoon-2012 Contingency Plan keeping in view its past experiences of heavy rain fall and high magnitude flood of during 1992 and 2001.

The flood management scheme of ICT has been evolved to effectively meet the flood situation in the district at short notice whenever need arises. NDMA would also mobilize its resources to back-stop the ICT administration's efforts, in case of any emergency situation.

**Note:** The above mentioned salient features have been derived from the CDMA, Islamabad Capital Territory's Contingency Plan for Monsoon Season-2012.





# National Monsoon Contingency Plan

*July-September 2012*



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July-September 2012**

National Disaster Management Authority  
Ministry of Climate Change, Islamabad  
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# National Monsoon Contingency Plan

*July-September 2012*





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# ACRONYMS

AJK	Azad Jammu & Kashmir
ADB	Asian Development Bank
DCO	District Coordination Officer
DDMA	District Disaster Management Authority
DRM	Disaster Risk Management
DRR	Disaster Risk Reduction
ERRA	Earthquake Reconstruction & Rehabilitation Authority
ERC	Emergency Relief Cell
FFC	Federal Flood Commission
FATA	Federally Administered Tribal Areas
FFD	Flood Forecasting Division
FWO	Frontier Works Organization
FDMA	FATA Disaster Management Authority
GB	Gilgit Baltistan
GLOF	Glacial Lake Outburst Floods
GoP	Government of Pakistan
GBDMA	Gilgit-Baltistan Disaster Management Authority
IASC	Inter Agency Standing Committee
IRSA	Indus River System Authority
INGO	International Non Governmental Organization
KP	Khyber Pakhtunkhwa
MSA	Maritime Security Agency
NDMA	National Disaster Management Authority
NFI	Non Food Item
NGO	Non-Governmental Organization
PDMA	Provincial Disaster Management Authority
PMD	Pakistan Meteorological Department
PIA	Pakistan International Airlines
PNSC	Pakistan National Shipping Corporation
SDMA	State Disaster Management Authority
SAFRON	States and Frontier Regions
SUPARCO	Space and Upper Atmosphere Research Commission
TCWC	Tropical Cyclone Warning Centre
WAPDA	Water and Power Development Authority
WMO	World Meteorological Organization
IPCC	Intergovernmental Panel on Climate Change
HCT	Humanitarian Country Team





## Introduction

Occurrences of frequent disasters of unprecedented nature, scope, and geographic spread have emerged as a serious challenge for the international community, particularly for developing countries who are struggling to achieve their development goals. Extreme climatic events are attributed by scientists and researchers to the climate change phenomenon being experienced globally. Even developed countries like Japan find it quite challenging to manage negative impacts of disasters like the Japan earthquake / Tsunami of 2011.

Pakistan has recently been exposed to a number of mega disasters including the Earthquake of 2005, Yemyin cyclone - 2007, Ziarat Earthquake - 2008, Attabad landslide – 2010, super floods- 2010 and more recently the unprecedented rain and floods of 2011. In order to tackle such challenges there is a strong need to reduce the impact and mount an effective response of disasters through better preparedness and contingency planning. Such planning processes are required to be undertaken in a holistic manner involving all stakeholders from grass roots levels up to national levels.

Keeping in view of the past experiences and lessons learnt, the monsoon contingency planning process has been reformed by the NDMA by conducting the exercise through a bottom up approach where district level authorities were encouraged via the provincial governments, to undertake their respective hazards and risk assessment, identify needs, plan effective deployment of available resources, prepare their Contingency Plans for the worst case scenarios i.e. the possible combination of the 2010 and 2011 heavy monsoon rains and floods of unprecedented nature.

The Provincial and district tiers are encouraged to enhance their own capacities and stockpiles/requirements of relief inventories enabling them to handle the disaster situation. In that context, the provinces of Punjab and Sindh have also been requested to allocate Rs. 5 billion each for disaster management activities, similarly the provinces of KP and Balochistan have been requested to allocate Rs. 3 billion each. Likewise the State of Azad Jammu & Kashmir (AJ&K) has been requested to allocate Rs. 2 billion besides Gilgit - Baltistan and FATA to make available Rs. 1 billion each to their disaster management agencies, enabling them to take all possible measures to mitigate and manage the likely negative impacts of monsoon rains induced floods.

The federal government has been requested to allocate Rs. 5 billion to the National Disaster Management Fund (NDMF) for managing preparedness and response for possible disaster threats.

## Global/Regional Perspective

The climate change phenomenon being observed around the globe in general and over the Hindukush, Karakoram and Himalayan Region in particular makes the region including countries like Pakistan, China, India, Nepal, Bhutan, Tajikistan, Afghanistan and Bangladesh more vulnerable and exposed to extreme weather and climate events. A changing climate leads to changes in the frequency, intensity, spatial extent and duration of weather and climate extremes and can result in unprecedented extremes as experienced in Pakistan in 2010 and 2011, recently.

The situation is further aggravated due to environmental degradation, lack of hazards' awareness among the masses, population intrusions in flood plains owing to increased economic constraints, inability to apply Disaster Risk Reduction considerations and interventions in major infrastructure development programmes, and gaps in capacities at all levels.

### Global Climate Risk Index -2010

The German-watch Global Climate Risk Index is an analysis based on the most reliable available data on the impacts of extreme climate weather events and associated socio-economic data. Pakistan, along-with Guatemala and Colombia have been identified to be the most affected countries during 2010. Table 1.1 below lists the most affected countries based on research carried out by the German-watch.

Rank	Country	CRI Score	Death Toll	Deaths per 10000 inhabitants	Absolute Losses (M \$ PPP)	Losses per unitGDP in %	HDI
1	<b>Pakistan</b>	<b>3.5</b>	<b>1891</b>	<b>1.1</b>	<b>25316</b>	<b>5.42</b>	<b>145</b>
2	Guatemala	6.33	229	1.59	1969	2.80	131
3	Colombia	8.0	320	0.70	7544	1.73	87
4	Russia	11.0	56165	39.3	5537	0.25	66
5	Honduras	14.67	139	1.73	220	0.65	121
6	Oman	17	24	0.81	1314	1.73	89
7	Poland	17.83	151	0.40	4745	0.66	39
8	Portugal	19.67	47	0.44	1749	0.71	41
9	China	23.50	2889	0.22	33395	0.33	101
10	Tajikistan	24.17	27	0.35	262	1.77	127

**Table 1: Global Climate Index – 2010**

## Special Report of IPCC

The Intergovernmental Panel on Climate Change (IPCC), is a scientific intergovernmental body, set up at the request of member governments. It was first established in 1988 by two United Nations organizations, the World Meteorological Organization (WMO) and the United Nations Environment Programme (UNEP), and later endorsed by the United Nations General Assembly. Its mission is to provide comprehensive scientific assessments of current scientific, technical and socio-economic information worldwide about the risk of climate change caused by human activity, its potential environmental and socio-economic consequences, and possible options for adapting to these consequences or mitigating the effects.

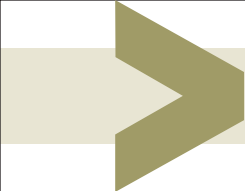
One of the core activity of the IPCC is publishing special reports on topics relevant to the implementation of the United Nations Framework Convention on Climate Change (UNFCCC), an international treaty that acknowledges the possibility of harmful climate change.

The Intergovernmental Panel on Climate Change (IPCC), in November 2011, in order to provide specific advice on climate change, extreme weather and climate events commissioned a Special Report on managing the Risks of Extreme Events and Disasters.



The special report of the IPCC was launched on 27th June, 2012 at Islamabad, Pakistan in a ceremony jointly organized by the National Disaster Management Authority, Ministry of Climate Change and Lead Pakistan. The objective was to sensitize policy makers, national / international experts of DRM and Climate Change and national media on challenges being faced by Pakistan due to negative impact of climate change. Key findings of the report include:

- Globally, cold days and nights have decreased, and warm days and nights have increased (90 – 100% chance)
- In many but not all regions of the globe, the length or number of heat waves has increased;
- Droughts have become less frequent, less intense, or shorter in some areas;
- Heavy precipitation events have changed. There is at least a 2-in-3 probability



that more regions have seen increases than decreases in heavy precipitation events;

- Rising sea levels have led to an increase in extreme coastal flooding events (66 – 100% chance);
- A 1-in-20 year hottest day is at least 66% likely to become a 1-in-2 year event by the end of the 21st century in most regions;
- A 1-in-20 year heavy rain event is predicted to become a 1-in-7 to 1-in-9 year event by the end of the century;
- A maximum high temperature that occurred only once every 20 years during 1980 – 2000 is predicted to occur between once every three years and once per year by 2100;
- Extreme high temperature readings that occur once every 20 years will increase by 1°C to 3°C (1.8°F – 5.4°F) by mid-21st century;
- An increase in temperature by about 2°C to 5°C (3.6°F – 9°F) by late-21st century;
- At least 66% likelihood that the frequency of heavy precipitation or the proportion of total rainfall from heavy falls will increase in the 21st century over many areas of the globe.
- Heavy rainfalls associated with tropical cyclones are likely to increase at least 66% with continued warming, and the maximum winds will increase;
- There is medium confidence that droughts will intensify in the 21st century in some regions and areas; and
- In some regions, the main driver for increased damages from extreme weather events will not be climate change, but increases in population and vulnerability.

Source:- IPCC's Special Report on managing the Risks of Extreme Events and Disasters is available at : <http://ipcc-wg2.gov/srex>



## National Perspective

Pakistan is prone to a number of natural disasters such as floods, landslides, earthquakes, cyclones, droughts, Glacial Lake Outburst Floods (GLOF) etc. However, in recent past, hydro-meteorological hazards, particularly floods have significantly increased in frequency and magnitude, primarily due to climate change phenomenon being experienced all over the world.



Pakistan is experiencing a gradual shift in the monsoon pattern and last twenty years data has indicated that monsoon precipitation impact zones are gradually shifting 80 to 100 kilometers westwards Indus and Kabul basins in Khyber Pakhtunkhwa and Punjab, from the traditional Kashmir catchment areas.

Pakistan is situated in Asian monsoon zone and usually receives monsoon rainfall during the months of July, August and September. These rains are ignited by the winds originating from Bay of Bengal.

Historically, Pakistan has experienced as many as 12 major flood events since its independence in 1947. The country experienced, historically, unprecedented floods in 2010, while rains and consequent floods in Sindh province in 2011 were a unique phenomenon in their occurrence, nature and magnitude.

According to the summary of losses / damages of floods-2010 as many as 20 million people of 78 districts were affected across the country. The cumulative economic costs



of these losses and those sustained by the infrastructure were estimated at Rs. 855 billion. As regards rains/floods-2011 in Sindh, 9.2 million people of 22 districts of the provinces of Sindh and Balochistan were affected. The estimated direct damage and indirect losses are approximated at Rs. 324.5 billion while estimated cost of recovery and reconstruction needs at Rs. 239 billion.



## Monsoon Hazards

During the last two consecutive years country faced flooding due to heavy monsoon rains. However, nature, geographical location and reasons for these floods were not alike. The floods-2010 was riverine in nature which kicked off from northern parts of Khyber Pakhtunkhwa due to collision of western and eastern weather systems originated from the Mediterranean Sea and the Bay of Bengal (India). Whereas floods-2011 occurred only in southern parts of the Province of Sindh and few parts of Balochistan owing to heavy monsoon induced rainfall while the rest of the country remained calm.

Monsoon hazards in Pakistan particularly riverine & flash floods normally occur in the months July, August & September.

A brief on each of the monsoon and miscellaneous hazards is given as under:

**Tropical Cyclones:** Tend to visit the coastal regions of Balochistan and Sindh including Thatta & Badin districts of Sindh.

**Riverine Floods:** Tend to occur almost every year in the main Indus River System and its tributaries (Indus, Ravi, Sutlej, Jehlum, Chenab, Kabul etc.) besides the secondary and tertiary rivers (Adezai, Naguwan, Tochi, Gabmila, Haro, Kunhar, Nari, Kech, Naulang).

**Flash Floods:** Tend to occur along the mountainous region adjoining the Indus river Basin, Kashmir, GB, KP, Balochistan and upper Punjab.

**Hill Torrents:** Tend to occur in hilly and semi hilly areas of KP, Punjab, Balochistan and Sindh etc.

**Urban Floods:** Tend to occur as a consequence of cloud burst, monsoon rains, sea cyclones (in Balochistan and Sindh) etc.

**Cloud Burst:** Tend to occur due to locally accentuated low cloud pressure area.

**Sliding:** Tend to occur in northern areas on account of persistent and penetrating rains.

## Emerging Trends

- Shift in monsoon rainfall pattern from North – East to North- West.
- Rise in daily mean temperatures from 0.6 to 1.0 Celsius in the arid zones;
- Rapid reoccurrence of extreme monsoon weather events like that of 1992, 1994, 2001, 2007, 2010 and 2011.



- Progressive increase in cyclonic activity along the coastal belt during the pre and post monsoon periods as evident since 2005 onwards.
- More rapid and uncertain receding of Hindukush, Himalaya Glaciers causing uncertain river flows in the Indus River System.
- Upstream intrusion of saline sea water in the Indus delta causing loss of precious agriculture land affecting mangrove growth, flora and fauna.
- Over 18 % increase in the rainfall along the monsoon zone; and
- About 3.5% decrease in cloud cover over monsoon vulnerable northern regions.

## **Latent Vulnerabilities**

- 2010 Floods have resulted in pronounced changes in rivers morphology in the northern regions with, more apparent changes in River Swat morphology. This has resulted in erosions, widened spans and unregulated flows. Such trends are likely to cause humanitarian consequences even in a moderate flood situation;
- 2011 monsoon rain induced floods in southern Sindh (does not directly fall in monsoon zone) have exposed a large segment of vulnerable population who were deemed to be safe since long.
- Population pressures have resulted in encroachments on river flood plains (Indus, Chenab, Sutlej and Jehlum) thereby enhancing risks and vulnerabilities;
- Detailed flood plains mapping covering entire Indus river system, its tributaries, secondary and tertiary rivers, nullahs etc. besides updating of existing flood plain maps is still to be done. This has been identified by the NDMA as a way forward, on the basis of which land use planning and demarcation of waterways could be done, to reduce risks from flood hazard.
- Pending revisions of Tarbela Dam SOPs, adoption of revised SOPs for Mangla Dam.
- Deferred maintenance of irrigation and flood infrastructure owing to insufficient allocation of O&M funds in the provincial budgets.
- Widespread environmental degradation has reduced the flood water absorption capacities of catchment regions and accentuated downstream vulnerabilities.
- Limited capacity in weather and flood forecasting, particularly for flash flood monitoring & forecasting and medium to long range weather forecasting.
- Insufficient surface storages to manage floods and to store additional water.

## Risk Mapping

Hazard	Spatial Impact
<b>Flash Floods</b>	<b>Balochistan:</b> Gwadar, Kech, Kachi, Kalat, Sibi, Sherani, Musakhail, Lora Lai, Ziarat, Kohlu, Zhob, Harnai, Lasbela Bolan, Jhal Magsi, Jaffarabad, Nasirabad, Khuzdar & Barkhan
	<b>KPK:</b> Swat, Upper Dir, Lower Dir, Shangla, Kohistan, Swabi, Malakand, Shangla, Lakki Marwat, Mansehra, Mardan, Charsadda, Peshawar, Nowshera, DI Khan, Tank & Chitral
	<b>Punjab:</b> Rajanpur, DG Khan, Mianwali, Layyah, Sialkot, Gujranwala, Sheikhpura, Lahore & Rawalpindi
	<b>Sindh:</b> Kambar Shahdadt, Umerkot, T.M. Khan, Mirpur Khas, Tando Allah Yar, Jacobabad, Dadu & Shikarpur, Badin, Thatta and Hyderabad.
	<b>AJK:</b> Neelum; Hattian Bala, Muzaffarabad & Kahuta, Kotli and Gari Habib Ullah.
	<b>FATA:</b> FR Tank, FR DI Khan, Bajaur & Khyber Agencies, FR Bannu, Kurram, Orakzai, FR Peshawar, S.Waziristan, Mohmand, FR Lakki,
	<b>GB:</b> Ghizer, Diamir, Gilgit, Hunza-Nagar, Skardu, Ghanche & Astor
<b>Riverine Floods</b>	<b>Balochistan:</b> Jaffarabad & Naseerabad
	<b>KPK:</b> Swat, Lower Dir, Upper Dir, Charsadda, Nowshera, Mardan, DI Khan, Peshawar & Chitral, Haripur, Buner, Bannu, Kohat
	<b>Punjab:</b> Muzaffargarh, DG Khan, Rajanpur, Layyah, Mianwali, Multan, Jhang, Sialkot, Sargodha, Wazirabad, Gujrat, Lahore – Shahdara & Jhelum
	<b>Sindh:</b> Kambar Shahdadt, Kashmir, Shikarpur, Larkana, Jacobabad, Dadu, Naushero Feroz, Benazirabad, Hyderabad, Badin & Thatta
	<b>AJK:</b> Neelum, Muzaffarabad & Hattian Bala and Gari Habib Ullah.
	<b>FATA:</b> Bajaur
	<b>GB:</b> Gilgit, Ghizer, Hunza-Nagar & Astor



## National Contingency Plan

Since the accuracy and reliability of our existing weather forecasting capabilities are limited to only 3 to 5 days advance forecasting, the NDMA despite quite optimistic overall seasonal weather forecast, has advised all PDMAs and the relevant stakeholders to remain prepared for the Worst Case Scenario, which has been defined as the combination or re-enactment of the scenarios of 2010 floods and the rains/floods of 2011, where we mostly had different areas affected. Therefore, response capacity should be developed to meet the response to over 29.2 million people affected by floods, during monsoon season 2012.

### Planning Assumptions

- ❑ The Scenario is premised on 2010 Indus Floods of Super High intensity and High Floods in rivers Chenab and Jhelum coupled with floods in southern parts of Sindh due to heavy rainfall as that of 2011;
- ❑ 29.2 million population is anticipated to be in need of relief support;
- ❑ Approximately 1.46 Million population is likely to be assisted through Rescue and Evacuation operations. This population is anticipated for possible relocation who will need shelter;
- ❑ However, relief support and assistance would be provided in terms of shelter, food, services like health, water & sanitation etc to all affected population.
- ❑ Contingency planning to take into account 2010 / 2011 Floods induced weak coping mechanisms of vulnerable population, particularly gender, children, elderly and persons with special abilities;

## Worst Case Scenario

It envisages approximate re-enactment of 2010 Floods combined with 2011 heavy monsoon rainfall in Sindh 2011. The re-enactment of worst case scenario is likely to create a total caseload of 29.2 million affected population for provision of relief support across provinces and regions of Pakistan as per the following details:

**Table 2: Case Load – Worst Case Scenario**

Province/Region	Expected case load (M)	Expected Relocation (No.) (5% of case load)
Balochistan	0.9	45,000
KP	2.9	145,000
Punjab	7.8	390,000
Sindh	16.5	825,000
AJ&K	0.8	40,000
FATA	0.2	10,000
GB	0.1	5,000
<b>Total</b>	<b>29.2</b>	<b>1,460,000</b>

The contingency plan anticipates the following indicative relief requirements for the affectees of worst case scenario for a period of one month's initial response. However, food requirements are likely to continue in case the disaster situation persists.

**Table 3: Requirements for Relief**

Province/Region	Tents			Blankets		
	Requirement	Stock	Gap	Requirement	Stock	Gap
Balochistan	15,000	3,000	12,000	30,000	10,736	19,264
KP	48,333	11,223	37,110	96,666	64,017	32,649
Punjab	130,000	5,617	124,383	260,000	–	260,000
Sindh	275,000	23,300	251,700	550,000	9,000	541,000
ERC	–	30,000	–	–	20,000	–
NDMA	–	31,469	–	–	114,316	–
Others *	18,333	383	17,950	36,666	–	36,666
<b>Total</b>	<b>486,666</b>	<b>104,992</b>	<b>381,674</b>	<b>973,332</b>	<b>218,069</b>	<b>755,263</b>

\* AJK, FATA, GB & ICT

**Table 4: Requirements for Relief**

Province/ Region	Mosquito Nets			Ration Packs (Millions)		
	Requirement	Stock	Gap	Requirement	Stock	Gap
Balochistan	30,000	–	30,000	0.45	–	0.45
KP	96,666	5,298	91,368	1.45	–	1.45
Punjab	260,000	–	260,000	3.9	–	3.9
Sindh	550,000	7,000	543,000	8.25	–	8.25
NDMA	–	25,000	–	–	–	–
Others *	36,666	–	36,666	0.55	–	0.55
<b>Total</b>	<b>973,332</b>	<b>37,298</b>	<b>936,034</b>	<b>14.6</b>	<b>–</b>	<b>14.6</b>

\* AJK, FATA, GB &amp; ICT


**Table 5: Financial Implications**

Item	Requirement	Unit Cost (Rs.)	Cost (Rs. Million)
Tents	381,674	10,300	3,931
Blankets	755,263 Nos	500	377
Mosquito Nets	936,034 Nos	425	397
Ration packs (10 kg/person/month)	14.6 M Packs (146,000 Tons)	800	11,680*
<b>Total</b>	<b>–</b>	<b>–</b>	<b>16,385</b>

\*Food requirement to continue if disaster persists

## Triggers for Response

- The respective DDMA/DDMUs are expected to manage and meet the requirements of mild to medium levels of disasters induced by monsoon hazards within the resources provided by the provincial governments.
- Disaster situations severely affecting a number of districts in Province would be managed by the respective PDMA and provincial governments. Provincial Governments shall keep ready to take on the initial caseload of worst case scenario, with their own mechanisms and resources.
- The Federal agencies will continue to perform their functions, roles and responsibilities; however, NDMA will mobilize and deploy its resources particularly the relief stocks available as “Federal Reserve” to assist in the relief operations, where provincial resources fall short of meeting relief needs.

- 
- ❑ Armed Forces may be involved and requested for assistance by the respective district / provincial / national level disaster management authorities at any stage, particularly for rescue, evacuation and emergency relief phases, in respective affected areas.
  - ❑ Contingency planning will address one month immediate humanitarian needs of relief goods. During this period the response strategy based on actual scale, magnitude and location of disaster would be developed and a coordinated response will be mounted.
  - ❑ The international community and the United Nations system would only be requested for assistance in case of the escalation of the situation beyond National Government's capacity to manage with its own resources.
  - ❑ The overall coordination role would rest with NDMA, which is engaged with UN to workout pre-defined coordination mechanisms, incase international assistance is requested.





# Coordination Mechanism

## National Disaster Management Authority

Certain key powers and functions of the National Disaster Management Authority, spelled out in the National

Disaster Management Act, 2010 are as follows:

- ★ “acts as the implementing, coordinating and monitoring body for disaster management;
- ★ Co-ordinates response in the event of any threatening disaster situation or disaster;
- ★ lays down guidelines for or give directions to the concerned Ministries or Provincial Governments and the Provincial Authorities regarding measures to be taken by them in response to any threatening disaster situation or disaster.

*(Reference section -9 (a) (f) & (g) of NDM Act, 2012)*

Therefore, the NDMA coordinates with key national stakeholders including Pakistan Met Department, Armed Forces, Federal Agencies, PDMAs and Provincial Governments for management of the entire spectrum of national disaster responses including dissemination of early warning, life saving operations including search & rescue, resources mobilization for relief provision and recovery oriented interventions. Consistent with the needs and national policies NDMA also coordinates responses of UN Agencies and the larger humanitarian community.

National Emergency Operations Center (EOC) shall be activated at NDMA,



Parliamentary Committee on Flood Relief 2011

Islamabad with effect from 15th July, 2012 for monitoring of the situation and coordination of possible response during monsoon season-2012, on 24/7 basis. The EOC shall always be manned by a duty officer, who functions under the overall supervision of Director (Response), NDMA, whose contact details are as follows:

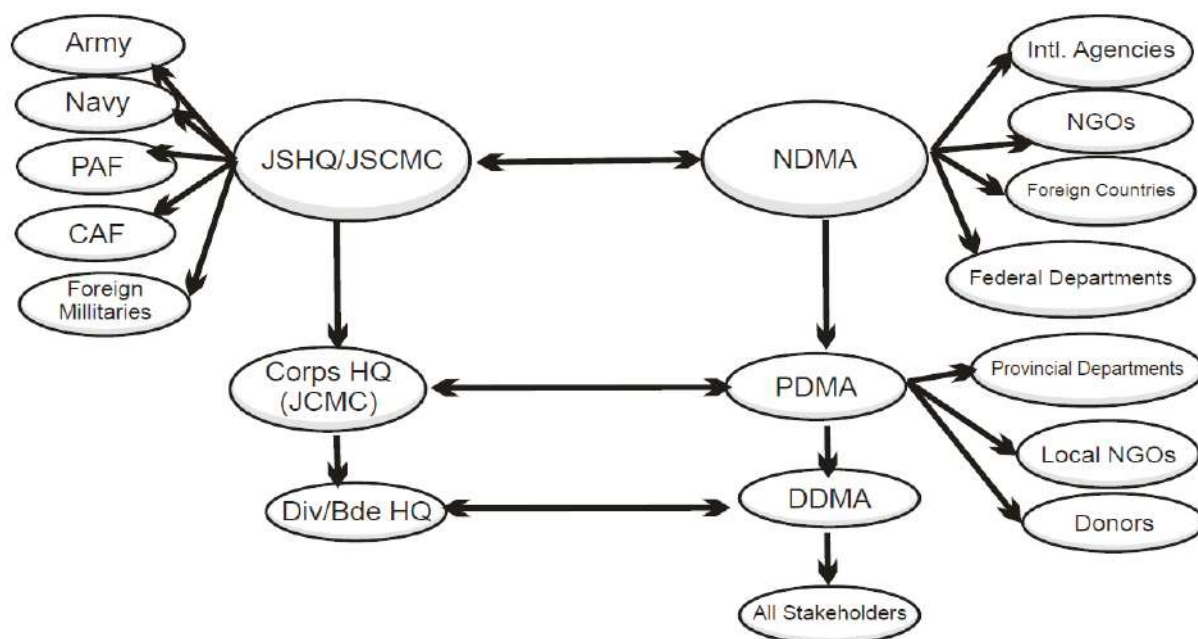
Lt. Col. Raza Iqbal, Director (Response), NDMA,

Tel: 051-9205035, Cell: 03015565737

Fax: 051-9205086 UAN: 111-157-157


Email: dirresponse@ndma.gov.pk

## Coordination Mechanism



## Provincial/Regional Disaster Managements Authorities

PDMA's are responsible for formulation of provincial level policies and plans for disaster management and monitoring implementation of national policy, plans as well as provincial plans. They are also responsible to examine the vulnerability of different parts of the province to different disasters and specify prevention or mitigation measures; evaluate preparedness at all governmental or non-governmental levels to respond to disasters and to enhance preparedness; and give directions to any provincial department or authority regarding actions to be taken in response to disaster (Reference section – 16 of the NDMA Act, 2010).




PDMA coordinate response in the event of disaster and the entire spectrum of provincial disaster responses including dissemination of early warning, prosecution of life saving responses and recovery oriented interventions. The PDMA coordinate in this regards with relevant DDMA, Provincial Line Departments, NDMA / Federal Government entities, UN Agencies in the province and the larger humanitarian community consistent with National and Provincial/regional policies. The provincial Emergency Operations Centers (EOC) shall be activated at respective PDMA during monsoon season, 2012 to respond to any threatening disaster situation or disaster.

## **District Disaster Management Authorities (DDMAs)**

DDMAs prepare disaster management plan including disaster response plan for the district. DDMA coordinate and monitor the implementation of the national, provincial and district policies and plans; ensure that the areas in the district vulnerable to disasters are identified and measures for prevention of disasters and mitigation of its effects are undertaken by the departments of the Government at district level as well as by the local authorities; lay down guidelines to be followed by Government departments at district level; facilitate community training and awareness; setup early warning mechanisms and dissemination of proper information to public; prepare district level response plans and guidelines; establish stockpiles of relief and rescue materials; provide information to provincial authority on different aspects of disaster management. ( Reference sections – 20 & 22 of the NDM Act, 2010)

The DDMA coordinates the actual implementation of all disaster response activities in the field including timely dissemination of early warning, launching life saving responses like search, rescue and evacuation, establishment and management of camps, relief distribution and recovery oriented interventions while working in close coordination with the relevant district and provincial stakeholders, therefore;

- DDMA shall activate district Emergency Operations Centers (EOCs) during monsoon season, 2012 to respond to any threatening disaster situation or Disaster;
- The respective DDMA shall undertake evacuation of all vulnerable population in case of any expected threat of floods based on early warnings and weather forecasts;
- Respective DDMA shall establish relief camps well in time, at all pre-identified safe places.

- 
- DDMA shall also ensure provision of life saving relief including food, shelter, water & sanitation through comprehensive relief distribution mechanism and health care delivery system outlined in their respective contingency plans;
  - DDMA shall maintain a database of the Registration of all relocated population in camps and overall affected population on gender segregated basis.
  - DDMA shall report on the situation and immediate needs to all relevant authorities.
  - DDMA shall prioritize vulnerable segments of society in their relief operations.
  - DDMA shall also facilitate early return of relocated population and help in restoring their lives and livelihoods.



# National Capacities

## Mitigation

### Ministry of Water and Power

It 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 and resource allocation for the flood protection works.

### Federal Flood Commission

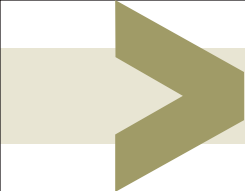
Implements Floods Risk Mitigation projects which include flood protection works as well as flood forecasting/warning systems improvements. As part of preparedness measures for monsoon season, 2012, FFC has undertaken the following:

- Countrywide monitoring of flood works conducted twice;
- Comprehensive Flood Management Plan for 10 year initiated through World Bank project (WCAP);
- High Level Flood Management Committee notified, comprising FFC, NDMA, WAPDA, PMD, PCIW and Engineering Directorate, GHQ;
- The Flood Communication Cell (FCC) set-up, working 24/7 from 15 June-15 October; and
- Desilting of Nullah Lai

### Water & Power Development Authority (WAPDA)

Reinforces floods impact mitigation through operational management of major water reservoirs i.e. Tarbela, Mangla Dams and Chashma Barrage and also monitors river flows and reinforces national floods early warning through deployment of flood telemetry system. As part of preparedness measures for monsoon season, 2012, WAPDA has undertaken the following:

- Ensured Up-to-date Flood Telemetry, HF Radio Systems, & gauges for river flow/discharge data collection and transmission on 24/7 basis;

- 
- Safety measures, including control rooms and deployment of heavy machinery, to handle all types of floods through Terbela, Mangla & Chashma;
  - Mangla Dam Raised up to 1242 ft. SPD; and
  - Re-routing of floods in desert areas through Raine Canal in Thar Desert at Guddu.

## **Pakistan Commissioner for Indus Waters (PCIW)**

The commissioner works under the Ministry of Water and Power, Government of Pakistan and is responsible for making arrangements of communication into advance of flood inflows in to Pakistan during flood seasons from the eastern rivers emanating from India. As part of preparedness measures for monsoon season,2012, PCIW requested India for advance information regarding:

- Flood flows from Chenab, Ravi, Beas and Sutlej;
- Inflows and reservoir levels of Bhakra, Pong and Thein dams; and
- Salal Hydroelectric Plant on Chenab

## **Pakistan Army (Corps of Engineers)**

Contributes in reinforcing the floods protective infrastructure in coordination with relevant the Provincial Irrigation Departments and FFC. It also contributes in flood impact mitigation works by undertaking emergency repairs of the infrastructure. It has important role in management of floods by assisting in breaching the protective bunds and infrastructure at predefined points.

## **Provincial Irrigation Departments**

Undertake 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 works.

## **Indus River System Authority (IRSA)**

Ddefines the dam / water storage and release policy as part of its mandate during the Rabi & Kharif seasons.

## **National Highways Authority (NHA)**

NHA is responsible for construction and maintenance nation-wide road network, including ensuring access during monsoon season. As part of preparedness measures for monsoon season, 2012, NHA has undertaken the following:

- Prepared Strategic Flood Plan;
- Activated Flood Emergency Cells in Head Office, Regional Offices, Maintenance Units;
- Operations Wing would work 24/7 for prompt restoration works; and
- Issuance of Daily Occurrence reports and Comprehensive Situation Report;

## **Pakistan Railways**

Pakistan railways is also an important organ ensuring access during monsoon season and it has established Flood Emergency Centres to work on 24/7 basis at 7-Operating units of Pakistan Railways.

## **Early Warning**

### **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 forecasts to numerous end users.

### **Floods 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.

### **Pakistan Space and Upper Atmosphere Research Commission (SUPARCO)**

SUPARCO deploys its satellite imagery capacities for disaster impact mitigation and also for early warning of disaster occurrence and trends monitoring.



## Response Agencies

### Armed Forces

In accordance with its constitutional mandate, Armed Forces are required to perform its functions in aid of civil power, in terms of:

- 1) Deployment of capacities for life saving responses including, search & rescue, evacuation, camps establishment and management, provision & distribution of relief to the affected populations;
- 2) Utilization and deployment of its aviation and air assets for disaster management activities and logistics of relief goods;
- 3) Temporary restoration and repair of critical infrastructure to establish communication access in the aftermath of disasters.

### Maritime Security Agency

This agency reinforces early warning of sea borne efforts and contributes to seaborne /coastal search & rescue and relief operations.

### Coast Guards

This agency augments coastal search & rescue and relief operations.

### Emergency Relief Cell (Cabinet Division)

It maintains stocks of emergency relief stores and releases them as per requirements of NDMA. It has procured and stored approximately 30,000 tents, 68,960 plastic mats, 20,000 blankets and 5,000 mosquito nets for possible disaster response during monsoon season, 2012. ERC also maintains aviation assets and three helicopters shall be available to NDMA for disaster management activities including search and rescue operations during monsoon season, 2012.

### National Health Emergency Preparedness and Response Network (NHEPRN), Cabinet Division

NHEPRN acts as focal point for all aspects of healthcare preparedness, response and recovery in disaster situations. It builds effective linkages and coordination with all national, regional and international agencies & stakeholders. It is also develops disease surveillance system and prepares protocols and guidelines. Moreover, it also conducts hazard based mapping of all healthcare facilities, including vulnerability assessment. NHEPRN has undertaken the following:

- Consultative workshops conducted with Provincial health departments, UN, NGOs etc;
- Preparedness on a caseload of 12.7 M population;
- Control Rooms set-up in high-risk districts;
- Disease Early Warning System (DEWS) set-up; and
- Commitment from WHO regarding provision of essential medicines for 3 Million population for one month.

## **Emergency Services - Rescue 1122**

As an emergency response service it contributes in search & rescue operations and in prosecution of emergency responses across Punjab. Rescue 1122 has also been introduced in AJK for similar functions. Limited response system of Emergency Services Rescue 1122 has also been launched in some districts of Khyber Pakhtunkhwa which is being scaled up in other districts of KP. Moreover, the Government of Balochistan has also started establishing Rescue Service 786.

## **United Nations System and Humanitarian Community**

The Humanitarian Country Team (HCT) for Pakistan, in adherence to the IASC guidelines has developed a Preparedness and Response Plan for Monsoon season-2012. As part of preparedness activities the UN System has mapped human resources sector-wise e.g. in community restoration it has identified 139 NGOs as potential partners and 1100 trained volunteers.

In terms of logistics, it has the availability of storage capacity up to approximately 400,000 m<sup>3</sup> across Pakistan. The UN System has 10,167 metric tons food stocks available which is sufficient for 350,000 beneficiaries for one month. 515 people have been trained on Camp Coordination and Camp Management (CCCM) in all the four provinces whereas 53 persons have been trained as trainers.

UN also assisted NDMA in capacity building of officials from the most vulnerable districts in Sindh and Punjab during June and July, 2012 in coordination, assessment, camp management, protection and registration, assistance distribution and warehouse management. Moreover, both the NDMA and UN are also working to test the level of preparedness through simulation exercises.

In terms of NFIs stock position the UN System has available stocks of 55,744 tents, 181,479 plastic sheets (Tarpaulin), 35,400 shelter tool kits, 410,411 blankets/quits, 36,800 summarized blanket (Khase), 61,850 kitchen sets, 101,513 sleeping mats, 1260 rope (30 meter), 37,492 poles and pegs, 129,196 bamboo, 112,970 Jerry can.



## **Pakistan Red Crescent Society (PRCS)**

Disaster Management is the core area of work of the Pakistan Red Crescent Society. PRCS works auxiliary to the government and supplements its efforts in providing humanitarian services to the most vulnerable. It has 43 district management cells, across Pakistan. PRCS is ready to cater for the needs of 43,000 families in case of any disaster.

## **Pakistan Humanitarian Forum (PHF)**

PHF is a network of 50 International NGOs with disaster response capacity and expertise in Pakistan. PHF is ready to work with Federal / Provincial governments to ensure timely and needs based response for life saving.

## **National Humanitarian Network (NHN)**

NHN is a network of National NGOs playing its role for effective and efficient implementation of relief and response activities for the flood affectees.

