COUNTRY REPORT OF PAKISTAN

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1. General Information of Pakistan

Pakistan is situated in South Asian region between longitudes 61^{o} & $75^{o}30'$E and latitudes $23^{o}30'$ & $36^{o}45'$N covering a total land area of 796,096 sq km. It comprises the four provinces of Punjab, Balochistan, Khyber Pakhtunkhwa (KP) and Sindh plus the Federal Capital (Islamabad), Gilgit-Baltistan region (GB) and 'Tribal areas (FATA)' under federal administration. Pakistan controls Azad Jammu &f Kashmir (AJK). There is a Parliamentary form of Government with a Prime Minister as the executive head and the President as the constitutional head. The National Language is Urdu. According to the World Bank, Pakistan's population is about 185 million at the year 2014.

The country shares its borders with Iran to the west, India in the south-east, Afghanistan in the north-west, and China in the north. The Arabian Sea lies to its south as shown in (Fig-1). Pakistan shares total border length of 6,744 km with neighboring countries; with Afghanistan (2,430 km); with China (523 km); with India (2,912 km) and Iran (909 km).The coastal belt is about 1,046 km. Details of Maritime claims are: Territorial Sea (12nm); Contiguous Zone (24 nm); Exclusive Economic Zone (200 nm) and Continental Shelf (200 nm).

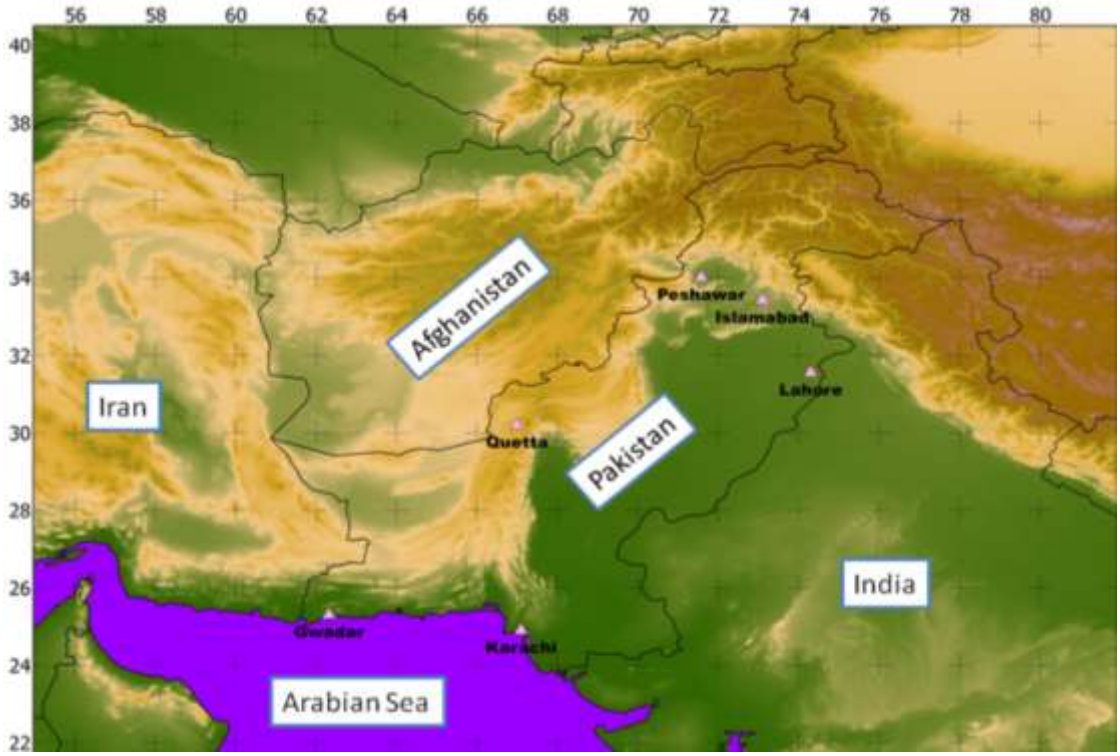

Figure-1. Geographic location of Pakistan and its main cities

Geographically we divide Pakistan into five major portions: Northern high mountain ranges (the Himalayas; the Karakorum and the Hindukush); The Balochistan Plateau along western bordering; the Indus River plains in the east; the Salt range across the northern portion of the Punjab province and the Deserts (Cholistan in Punjab & Thar in Sindh province).

The climate of Pakistan varies with its topography but most consists of hot, dry desert, temperate in north-west and arctic in the north. About 60% of the total land area is classified as arid, which receives less than 200 mm annual rainfall. The southern slopes of the Himalayas and the sub mountainous tract receive higher rainfall ranging from 760 to 1270 mm annually. Some areas adjoining Kashmir receive more than 2000 mm precipitation per annum.

Pakistan has four well marked seasons: Cold, from November to February; Pre-monsoon (Hot), from March to mid of June; Monsoon, from mid of June to mid of September and Post-monsoon, from mid of

September to October. Summer season is extremely hot and the relative humidity ranges from 25% to 50%. Day-time temperature in this season remains 40oC and beyond in plain areas. The average temperatures in winter range from 4oC to 20oC. Mercury sometimes falls well below freezing point in Northern parts of the country. Temperatures can be as low as 27°C in the north (at Skardu) in winter and as high as 52°C in the southern parts during summer.

2. Natural Hazards in Pakistan

Due to geo-physical conditions, climatic extremes, and high degrees of exposure and vulnerability, Pakistan is a disaster-prone country. Pakistan's exposure to natural hazards and disasters could be ranked between moderate to severe. A range of hydro meteorological, geo-physical and biological hazards including earthquakes, floods, tsunamis, cyclones and storms, droughts, glacial lake outbursts, landslides, avalanches, pest attacks and epidemics pose risks to Pakistani society. Some of these hazards (e.g. floods, landslides etc.) are predominantly seasonal and occur on an annual basis, whereas other hazards such as earthquakes and tsunamis are rare events but potentially highly destructive. Pakistan frequently suffers from earthquakes. Northern and Western parts are particularly vulnerable to earthquakes. The Indus River is known as flood-prone area especially in July and August. High priority hazards in terms of their frequency and scale of impact are: earthquakes, flooding, droughts, wind storms and landslides that have caused widespread damage and losses in the past.

2.1 Natural Hazards Likely to Affect Pakistan

According to the NDMA, the analysis of hazard risks, vulnerabilities and dynamic pressures bring home a scenario of more people living in and around hazard-prone areas. More people would be living in existing settlements in hazard-prone areas and new settlements would continue to

spring –up with expanding population. This trend may worsen over the years since population of Pakistan is expected to be doubled in another 25-30 years. At the other end, the frequency, severity and intensity of certain hazards is on rise; e.g. droughts, flooding, soil erosion and landslides, resulting from environmental degradation and climate change. The regions of Kashmir, Northern Areas and parts of the Khyber Pakhtunkhwa (KP) province are particularly vulnerable to landslide hazards. Aside from the young geology and fragile soil type of mountain ranges, accelerated deforestation is a major cause behind increased incidences of landslides. Small scale isolated landslide hazards happen frequently in the above mentioned regions. Frequency of landslides may increase in future since the forest cover is shrinking by 3.1% (7000 - 9000 Hectare of land taken away annually).Due to topographical structure, most part of Pakistan has high vulnerability towards landslides. From these scenarios it would be concluded that disasters in future would be more frequent and their social, economic and environmental impacts higher than before. Regions that previously were not prone to certain hazards (e.g. droughts, flooding), may experience them in future.

2.2 Recent Major Disasters:

A) Hindukush Earthquake (October 2015)

It was of magnitude 8.1 earthquake (PMD) that struck South Asia on 26th October 2015, at 14:09 PST (09:09 UTC) with the epicenter at Hindukush region(45 km north of `Alaqahdari-ye Kiran- wa Munjan), Afghanistan having depth 193km. An aftershock of 5.3 magnitude struck 40 minutes after the main event. Mobile phone services were choked for several hours because of the high voice traffic. Tremors were felt in Pakistan, Tajikistan and Kyrgyzstan. The earthquake was also felt in the Indian cities of New Delhi and Indian Administered Kashmir, and in the prefectures of Kashgar, Aksu, Hotan, and Kizilsu in Xinjiang, China while damage was also reported in Afghan capital Kabul. According to National Disaster Management Authority (NDMA) preliminary state of losses and

damages last updated on October 29, 2015 are, total 272 people died, 2,152 injured, and total 25,367 houses damaged. Out of total deaths, 83 percent occurred in Khyber Pakhtunkhwa (KP) province of Pakistan.

For detailed damages/losses, response & recovery of Hindukush earthquake 2015 visit:
http://www.ndma.gov.pk/new/disasters/losses.php

B) Flood (July 2015):

Due to heavy monsoon rainfall in July 2015 affected several areas of Pakistan triggered river and glacial lake overflow in Khyber Pakhtunkhwa (KP) and river overflow in Punjab province. According to National Disaster Management Authority (NDMA) preliminary state of losses and damages last updated on September 12, 2015 are, total 238 people died, 232 injured, total 4,111 villages affected and 1.6 million populations affected.

For detailed damages/losses, response & recovery of 2015 Flood visit: http://www.ndma.gov.pk/new/disasters/losses.php
http://www.ndma.gov.pk/new/disasters/rescue.php

C) Flood (September 2014):

Due to heavy monsoon rainfall in September 2014 resulted widespread flooding in Azad Kashmir, Punjab, Gilgit-Baltistan (GB), Khyber Pakhtunkhwa (KP) and later Sindh province in Pakistan. According to National Disaster Management Authority (NDMA), total 367 people died, 673 injured, total 107,102 houses damaged, 2.5 million population affected and crop affected area was 2.4 million acres approximately.

For detailed damages/losses, response & recovery of Flood (September 2014) visit:
http://www.ndma.gov.pk/new/aboutus/flood_2014.pdf

D) Awaran Earthquake (September 2013):

This earthquake occurred on 24th September, 2013 having a magnitude of 7.7 Mw and a maximum intensity of VII (Very Strong). The shock occurred 66 kilometers (41 mile) north-northeast of Awaran in the province of Balochistan, southwestern Pakistan. Mashkai, Mangoli, Awaran and Mala/Dandar areas in Balochistan were badly affected. According to NDMA, total 386 people died, 816 injured and 46756 total houses damaged.

For detailed damages/losses, response & recovery of Awaran Earthquake (September 2013) visit:
http://www.ndma.gov.pk/new/aboutus/EQ_Awaran_13.pdf

E) Flood (August 2013):

Due to heavy monsoon rainfall in August 2013 triggered flash floods and caused widespread losses and damage across Pakistan. All provinces and Azad Jammu & Kashmir badly affected. According to National Disaster Management Authority (NDMA), total 333 people died,173 injured, total 799,43,15 houses damaged, 1.5 million population affected and crop affected area was 1.1 million acres approximately.

For detailed damages/losses, response & recovery of Flood (August 2013) visit: **http://www.ndma.gov.pk/new/aboutus/flood_2013.pdf**

F) Flood (September 2012):

The floods began in early September 2012, resulting from heavy monsoon rains in Khyber Pakhtunkhwa (KP), Upper Sindh, Southern Punjab and Balochistan regions of Pakistan. Initially according to the Met Office forecasts, Pakistan was to receive below normal rainfall in 2012 and most of these areas were bracing for a drought. But by September 1 the Pakistan Meteorological Department (PMD) started to roll out emergency weather advisories stating that an extremely low

pressure Monsoon system, developed over the Bay of Bengal will enter the country and cause widespread heavy rainfall across Southern Punjab, Southern Khyber Pakhtunkhwa (KP), Eastern Balochistan and Sindh. The low pressure system entered the country on September 3 and lashed these areas with heavy falls. The system continued to stay till September 12, 2012.Flash Floods triggered by heavy rains caused widespread destruction across vast swathes of the country, breaking a 24-year rainfall record. The chief amount of rainfall recorded 481 mm at Jacobabad in Sindh province from 5 to 9 September 2012.

According to National Disaster Management Authority (NDMA), total 571 people died, 2,902 injured, total 636,438 houses damaged, 4.8 million population affected and crop affected area was 1.2 million acres approximately.

For detailed damages/losses, response & recovery of Flood (September 2012) visit:
http://www.ndma.gov.pk/new/aboutus/flood_2012.pdf

G) Flood (August-September 2011):

The flood was originated mostly because of rainfall and observed the highest ever recorded monsoon rain in Sindh province started from Aug 11, 2011 to Sept 14, 2011. So the inundated area increased respectively with rainfall .Unprecedented torrential monsoon rains caused severe flooding in 16 districts of Sindh province. Balochistan province also affected.
According to National Disaster Management Authority (NDMA), total 520 people died, 1180 injured, total 16 million houses damaged, 9 million population affected approximately and crop affected area was 2.3 million acres approximately. It was second most devastating flood after July 2010 flood.

For detailed damages/losses, response & recovery of Flood (August-September 2011) visit:
http://www.ndma.gov.pk/new/aboutus/flood_2011.pdf

H) Flood (July 2010)

Pakistan experienced the worst floods in its history over the course of the Monsoons .In July 2010, heavy rainfall was a result of interaction of Westerly and Monsoon systems over Pakistan, producing record precipitation 528mm at Mianwali and 471mm at Saidu Sharif. Pakistan received 70.5% above normal rainfall in the month of July which caused flash flooding and riverine flooding in several parts of the country resulting into loss of life, property and widespread displacement throughout country. At one point an area greater than that of Britain was under water. All provinces (Punjab, Khyber Pakhtunkhwa, Sindh & Balochistan) including Gilgit-Baltistan and Azad Jammu & Kashmir badly affected. The floods destroyed homes, crops, and infrastructure and left millions vulnerable to malnutrition and waterborne disease .Estimates of the total number of people killed ranged from 1750 to 2200. The Pakistani economy was harmed by extensive damage to infrastructure and crops. Total economic impact may have been as much as US$ 43 billion. According to National Disaster Management Authority (NDMA), total 602,765, houses damaged, total crop area affected 2085.4 thousand acres, 6673 WSS (affected), 10,192 educational institute damaged and 146 industries damaged.

For detailed damages/losses, response & recovery of Flood (July 2010) Visit: **http://www.ndma.gov.pk/new/aboutus/flood_2010.pdf**

Year	Nature of Disaster	Deaths	Injured	Population Effected (million)
2015	Hindukush Earthquake (Magnitude: 8.1 as per PMD)	272	2,123	-
2015	Flood	238	232	1.6
2014	Flood	367	673	2.5

2013	Awaran Earthquake (Magnitude: 7.7)	386	816	-
2013	Flood	333	173	1.5
2012	Flood	571	2,902	4.8
2011	Flood	520	1,180	9 .0
2010	Flood	1750-2200	-	20

Table-1. Summary of recent major disasters and their devastation (Source: NDMA)

3. Disaster Management System of Pakistan

3.1 Administrative System

Like Japan, Pakistan has also three administrative level of governance; National Disaster Management Authority (NDMA) as focal point on federal level, the provincial Disaster Management Authority (PDMA) is the focal point for DRM endeavors in respective provinces and District Disaster Management Authority (DDMA) on the district levels. If disaster occurs, DDMA will be the first responder for rescue and if needed the disaster may be focused on provincial or national level. National Disaster Management Commission (NDMC) headed by prime minister has been established for the formulation of over policies on national level while on provincial level Provincial Disaster management Commission (PDMC) headed by the chief minister of respective province will act as chairman. The lower tear in disaster management system in Pakistan is DDMA which is headed by the deputy commissioner of respective districts. NDMA would provide technical guidance to national and provincial stakeholders about formulation of plans, strategies and program for disaster risk management.

NDMC will formulate the policies and decisions on advice of NDMA. Chairman / director general NDMA will act as secretary of the commission at federal level while director general PDMA will perform his duties as secretary on provincial level. The stake holders for execution of pre disaster activities and post disaster scenario will be the district administration with the help of civil defense department and other member departments, NGOs and IOs.

Enhancement of National Disaster Management Act 2010 which provide for following institutional arrangements:

- Disaster Management Commission at National(NDMC) and Provincial / Regional levels (PDMC)
- Disaster Management Authorities at National (NDMC), Provincial / Regional (PDMC) and District (DDMA) level
- National Emergency Operation Centers (NEOC)
- National Institute of Disaster Management (NIDM)
- National Disaster Management Fund (NDMF)
- Provincial Disaster Management Fund (PDMF)
- National Disaster Response Force (NDRF)

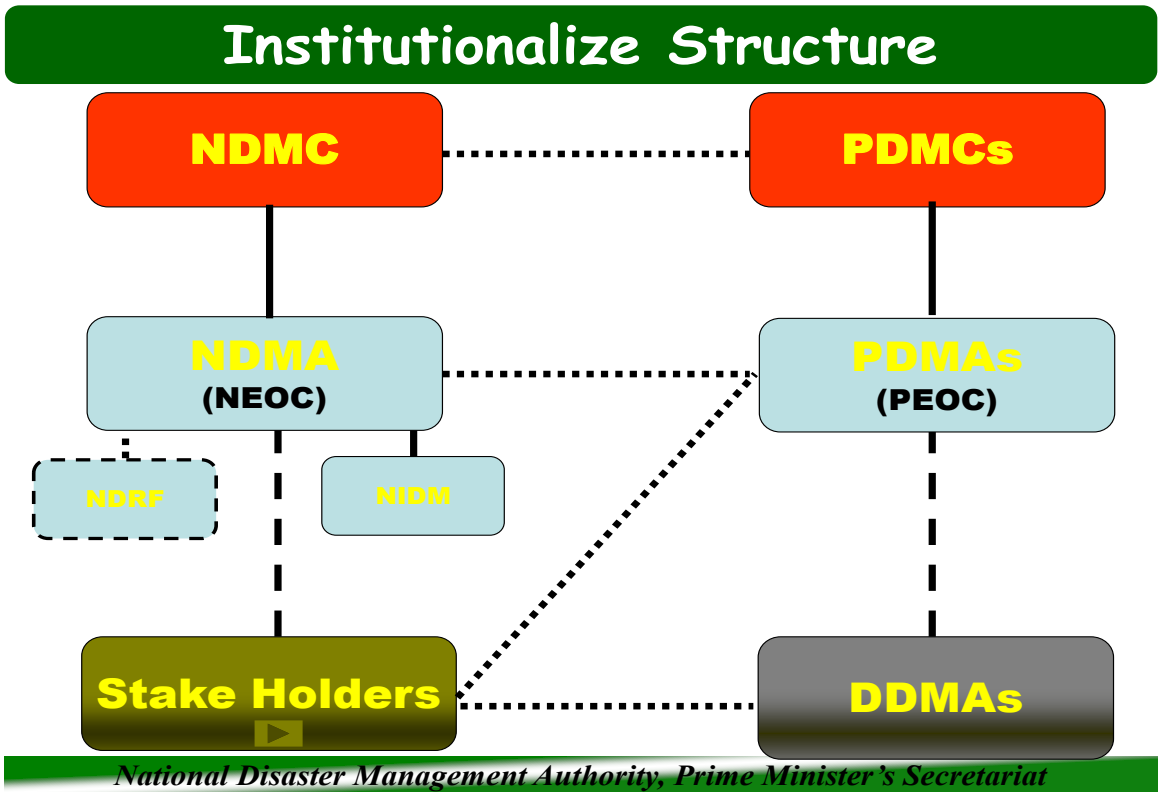

Figure-2. Institutionalize Structure
(Different Tires of Disaster Management Systems)
(Source: Presentation by Nadeem Abro (NDMA), on National Disaster System & Laws in Pakistan , 2011).

A) National Disaster Management Commission (NDMC)

NDMC formed in 2006 under National Disaster Management Act 2006 .Prime Minister is the ex-officio Chairman. The members include leaders of the opposition in Senate and National Assembly, Federal Ministers for Defense, Health, Foreign Affairs, Social welfare & Special Education, Communication, Finance and Interior. Membership also includes Governor KP (for FATA), Chief Ministers of four Provinces, Prime Minister of AJ&K, Chief Executive of NAs, Chairman JCSC, and representatives of Civil society or any other person appointed by the Prime Minister. The Director General / Chairman of the NDMA acts as ex-officio Secretary of the commission. NDMC is responsible for performing following functions:

- Lay down policies on disaster risk management
- Approve the National DRM Framework and Emergency Response Plan
- Approve plans prepared by Ministries or Divisions of the federal government in
- accordance with National Framework and Plan
- Lay down guidelines to be followed by Federal and Provincial Authority
- Arrange for, and oversee, the provision of funds for risk reduction, preparedness and response and recovery measures.
- Provide support to other countries affected by major disasters as may be determined by the federal government.
- Take such other measures for risk reduction, preparedness and capacity building as it may consider necessary

- In addition, NDMC may constitute an advisory committee or committees of experts in disaster risk management

Meetings: NDMC will meet twice a year (before the start of monsoon and winter seasons, during which seasonal hazards may occur), when early warning thresholds indicate need, and when a disaster strikes.

3.2 Legal System and Framework

National disaster Management Ordinance promulgated in 2007. Implementation of the ordinance would be ensured by NDMC. Under this ordinance National Disaster Management Authority (NDMA) shall serve as the focal point and coordinating body for the execution of the whole spectrum of disaster management activities. All stakeholders including government bodies, agencies at the federal as well as provincial level, armed forces, UN agencies, international organizations and NGOs shall work through the NDMA in all stages of disaster management.

A) New Laws

National Disaster Management Ordinance 2007
National Disaster Management Act 2010

B) Periodic legislation

The National Calamities (Prevention & Relief) Act 1958.
Local Government Ordinance 2001
Emergency Service Ordinance 2002

C) Supplementary Laws

Pakistan environmental Act 1997
AJ&K environmental Act 1995
Karachi Port Trust Ordinance 1994

3.3 Structure of Disaster Management

A) National Platform for Disaster Risk Reduction

- **National Disaster Management Authority (NDMA)**

National Disaster Management Authority (NDMA) formed in 2007. It is an executive arm and secretariat of National Disaster Management Commission (NDMC) and responsible to manages complete spectrum of disaster in a Pakistan. NDMA map all hazards in the country, organize training and awareness raising activities and act as Government of Pakistan's focal point for dealing with national and international community. National Disaster Risk Management Framework (NDRMF) was prepared by the NDMA in March 2007. The NDRMF served as an overall guideline for disaster risk management at national, provincial and district levels. In March 2010, the NDMA formulated the National Disaster Response Plan (NDRP), which presents emergency response activities for all stakeholders including Standard Operation Procedures (SOPs) of emergency response. NDMA responsible for performing following functions:

- Map all hazards in the country and conduct risk analyses on a regular basis
- Develop guidelines and standards for national and provincial stakeholders regarding their role in disaster risk management
- Provide technical assistance to federal ministries, departments and provincial DM authorities for disaster risk management initiatives, Organize training and awareness raising activities for capacity development of stakeholders, particularly in hazard-prone areas
- Coordinate emergency response of federal government in the event of a national level disaster through the National Emergency Operations Centre (NEOC)
- Declare a National Disaster Awareness Day (to commemorate 08 October Earthquake) and conduct awareness raising activities at the occasion
- Establish a National Disaster Management Fund
- Coordinate, formulate and Develop guidelines and standards for provincial/regional and local stakeholder regarding their role in disaster risk management

- Ensure preparation of disaster risk management plans by all districts
- Promote education, awareness and training on disaster risk reduction and response

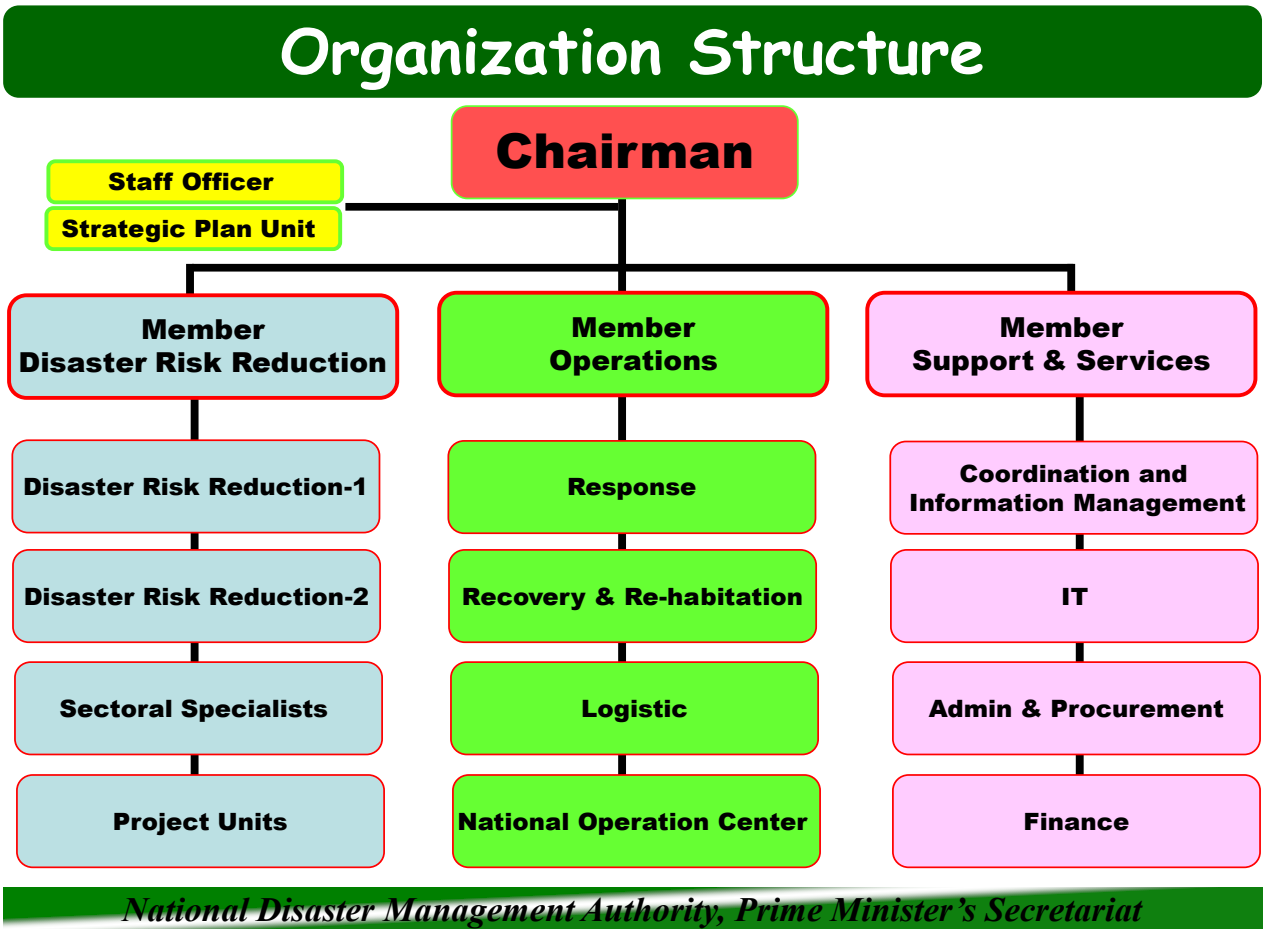

Figure-3. Organization Structure of NDMA (Source: Presentation by Nadeem Abro (NDMA), on National Disaster System & Laws in Pakistan, 2011).

B) National Organizations for Disaster Risk reduction

NDMA is responsible for dealing complete spectrum of disaster in the country as discussed above. Other main Organizations & their functions with disaster related responsibilities are listed below:

- **Emergency Relief Cell (ERC)**
  - Develop policies and arrangements for procuring relief items on a fast track basis
  - Procure relief items, when needed
  - Stockpile relief items in collaboration with national and provincial EOCs, Civil
  - Defense, Red Crescent, and other stakeholders
  - Make arrangements for receipt of international assistance
  - Make arrangements for receipt of international response teams

- **Pakistan Meteorological Department (PMD)**

Pakistan Meteorological Department is both a scientific and a service department, and functions under the Cabinet Secretariat, Aviation Division. It is responsible for providing meteorological service throughout country. Apart from Meteorology, the department is also concerned with Agrometeorology, Hydrology, Astronomy and Astrophysics, Seismology, Geomagnetism, Atmospheric Electricity and studies of the Ionosphere and Cosmic Rays. The major functions of PMD are to provide information on meteorological and geophysical matters with the objective of disaster mitigation due to weather and geophysical phenomena, agriculture development based on climatic potential of the country, prediction and modification of weather forecasts. To handle disasters the department has introduced modern systems like:

- National Weather Forecasting Centre Islamabad (NWFC)
- Marine Meteorology & Tropical Cyclone Early Warning Centre Karachi (TCWC)

- National Drought Monitoring Centre Islamabad (NDMC)
- National Seismic Monitoring and Tsunami Early Warning Centre Karachi（NTWC）
- Flood Forecasting Division Lahore (FFD)
- Flood Forecasting and Warning System for Lai Nullah Basin Islamabad

Under the leadership of **Dr. Ghulam Rasul**, Director General PMD, following MoU's signed most recently:

1. **Mutual Collaboration on Adaptation to Climate Change: MoU signed by Inter Cooperation (IC) Swiss NGO and PMD:**

   MoU signed between Inter Cooperation(IC), Swiss NGO, and Pakistan Meteorological Department (PMD) for Mutual Collaboration on Adaptation to Climate Change on 17 September 2015 at PAU, Peshawar. MoU was signed by Dr Arjumand Nizami, Country Programme Director and Dr. Ghulam Rasul, Director General of PMD. PMD and IC are both supporting University of Agriculture Peshawar in strengthening of the climate change cooperation.

2. **Mutual Collaboration on Adaptation to Climate Change : MoU signed by University of Peshawar (UAP) and PMD:**

   MoU signed between The University of Peshawar and Pakistan Meteorological Department (PMD) for Mutual Collaboration on Adaptaion to Climate Change on 17 September 2015 at PAU, Peshawar. MoU was signed by Prof. Dr Zahoor A. Sawati, Vice Chancellor and Dr. Ghulam Rasul, Director General of PMD. Both the parties agree to continue collaboration on strengthening the CCC at UAP.

3. **Met-Office Launched Phone-Based Services:**

   Pakistan Meteorological Department (PMD) launched district-wide Phone based Weather Information Service with the collaboration of Centre for Language Engineering (CLE), of University of Engineering and Technology (UET), Lahore. The Weather Information System was inaugurated by Chairman NDMA, Maj. Gen Asghar Nawaz. Dr. Ghulam Rasul, Director General PMD, Dr. Sarmad Hussain and

Dr. Tania Habib from UET stated that it is completely automated system which will pick the weather forecast of any district from the computer model archive of PMD.

Weather information service provides weather forecast of 139 districts of Pakistan by dialing the number +92-51-9250363. When a user calls this number, the user is greeted by the system and then asked for a district name. The system provides the next 24 hour weather forecast of the desired district to the caller.

DG PMD further informed that more details on weather information will be added and the number of phone lines will be increased and specialized weather information system for farmers of different districts of Pakistan will also be launched soon.

4. Climate Related Maritime and Coastal Studies : MoU signed by National Centre for maritime Policy Research (NCMPR) and PMD

MoU signed between National Center for Maritime Policy Reseach (NCMPR), Bahria University, Karachi, and Pakistan Meteorological Department (PMD) for research on “Meteorological and Climatic Factors in Relation to Maritime Domain and Coastal Areas of the Country" on 3rd August 2015 in Headquarter Building of Pakistan Meteorological Department.

Figure-4. Climate Related Maritime and Coastal Studies : MoU signed by National Centre for maritime Policy Research (NCMPR), Bahria University

and PMD (Source:PMD, Press Release August 03,2015)

MoU was signed by Mr. Sayyid Khawar Ali HI (M), Vice Admiral (Retd) / Director General NCMPR Pakistan and Dr. Ghulam Rasul, Director General of PMD. The coastline of Pakistan extends 1,050 km (650 mi), 250 km falling in Sind province and 800 km in Balochistan. Through MoU between NCMPR and PMD will work together to conduct research in maritime and coastal domains to enhance scholarly cooperation. The broader areas of cooperation will include mutually beneficial activities which are determined to be desirable and feasible for the achievement of the objectives of joint research projects.

- **Federal Flood Commission (FFC)**
  - Prepare flood protection plans for the country
  - Review and approve flood protection schemes prepared by provincial governments and concerned federal agencies.
  - Implement measures to improve flood forecasting and warning system
  - Prepare a research program for flood control and protection
  - Standardize designs and specifications for flood protection works
  - Evaluate and monitor progress of the National Flood Protection Plan implementation

- **Civil Defence**
  - Assist local administration / armed forces in rescue, evacuation and relief measures.
  - Save lives by rapid extrication of persons trapped beneath debris or in buildings damaged by natural or manmade disasters
  - Render first aid to injured persons and transport them to nearest hospitals
  - Ensure evacuation of damaged buildings/structures including demolition of damaged structures to avoid further loss of life and properties.
  - Provide quick and effective search and rescue coverage, protection and operation in case of any disaster; Build public confidence by introduction of more effective measures for their

protection and ensure adoption of requisite preventive measures by the communities to assist in restoration of essential traffic so as to carry out rescue work without any hindrance or obstruction
- Develop capacities in emergency response; e.g. evacuations, rescue, first aid etc.

- **National Crisis Management Cell (NCMC)**
  - Manage a round the clock Operational Control Room
  - Collect information on emergencies of all sorts in the country
  - Coordinate with Provincial Crisis Management Cells (PCMCs) and other agencies to gather relevant information; e.g. casualty figures etc.

- **Earthquake Reconstruction and Rehabilitation Authority (ERRA)**
  - Post disaster damage assessment
  - Reconstruction and rehabilitation in the affected areas
  - Seismically safe reconstruction regimes and solutions
  - Risk Reduction Program of ERRA aims at making earthquake affected communities relatively safer from future hazard events in the area by developing their skills, response and institutional capacities. Components of their program are district hazard indication, enhancing response capacity of communities.

C) Local Organization for Disaster Risk Reduction

- **Provincial/Regional Disaster Management Authorities (PDMAs)**
  Provincial/Regional Disaster Management Commissions (PDMCs) established in each province/region. Under PDMCs, Provincial/Regional Disaster Management Authorities (PDMAs) in Punjab, Balochistan, Sindh, Khyber Pakhtunkhwa (KP) provinces and also in Gilgit-Baltistan (GB) and Azad Jammu & Kashmir regions (AJK). PDMCs are the policy making bodied and PDMAs are coordinating and implementing policies at provincial/regional levels. The functions of PDMAs are same as that of NDMA did at national level.

- **District Disaster Management Authorities (DDMAs) & Municipal Disaster Management Authorities (MDMAs)**

  District Disaster Management Authorities (DDMAs) shall be established by the provincial government in hazard prone areas on a priority basis. The District Authority will comprise of the Nazim, District Coordination Officer (DCO), and Police Officer, ex-officio, EDO health and Tehsil Nazims. The local government can nominate other officers as members of the DDMA or MDMA. They may include EDOs for education and agriculture, Red Crescent, NGOs, media, private sector,
  fire services, or any other local stakeholders. Municipal Disaster Management Authorities (MDMAs) will be established in urban areas and cities on similar lines. The DDMAs and MDMs will perform following functions:

  - Formulate district disaster risk management plan, based upon local risk
  - Assessment, and coordinate its implementation
  - Review development plans of government departments and provide guidance on mainstreaming disaster risk reduction measures in these plans
  - Continuously monitor hazards, risks and vulnerable conditions within the district, municipality, or cantonment areas
  - Prepare guidelines and standards for local stakeholders on disaster risk reduction,
  - Conduct education, training and public awareness programmes for local officials, stakeholders and communities

- **Tehsil and town Authorties**

  Tehsil and town Nazims will lead the risk reduction and response operations with the help of Tehsil or Town Municipal Officer in consultation with the DDMA. Other key players include; extension workers, police, fire services, community organizations (COs), traditional leaders and NGOs. Appropriate local structures would be established for risk reduction and preparedness.

- **UNION COUNCILS**

  Union Councils are the lowest tier in the governance structure. Elected representatives from village and ward levels form these

bodies. These bodies have an important role in allocation of resources for local development works.

- **COMMUNITY BASED ORGANIZATIONS**

  In order to promote community level disaster risk management activities, the capacity of existing community organizations will be developed and enhanced by district and tehsil authorities. In the absence of community organizations, new groups would be established to work on disaster risk reduction management. CBOs will be trained about local early warning system, evacuation, first aid, search and rescue, fire fighting etc. Linkages would be developed between CBOs and relevant local agencies; e.g. agriculture, banks, health and veterinary services to promote disaster preparedness. Skills and knowledge of CBO leadership will also be developed in financial management, people management, resource mobilization, Interpersonal communication and presentation and negotiation skills. The provision of Citizen Community Boards (CCBs) in Local Government Ordinance (LGO 2001) provides a good opportunity to organize communities and mobilize resources for issues like local level disaster risk management

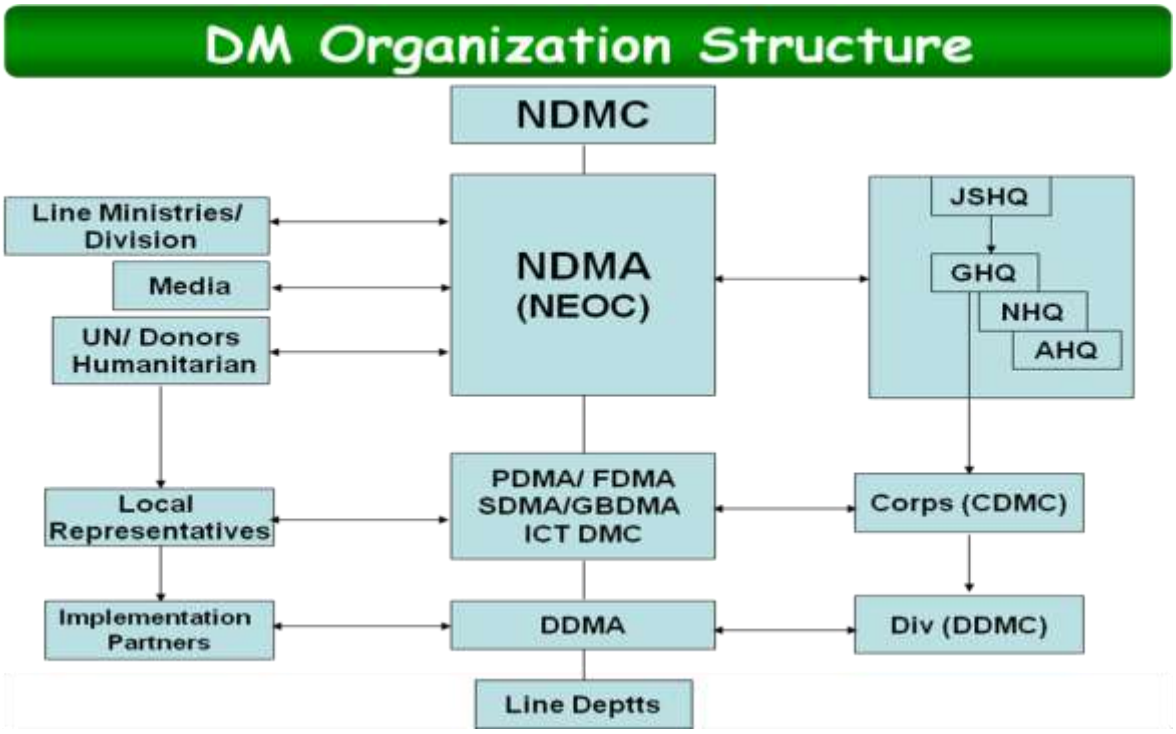

Figure-5. Disaster Management Organiszation Structure of Pakistan (Source: Presentation by Nadeem Abro (NDMA), on National Disaster System & Laws in Pakistan, 2011).

Phase	Agency
Mitigation/Prevention	
	Federal Flood Commission
	Provincial Irrigation Departments
	Water and Power Development Authority (WAPDA)/ Dams safety council
Preparedness and Response	
	Armed Forces
	Civil Defence
	Emergency Relief Cell
	Fire Services
	National Crisis Management Cell (NCMC)
	Pakistan Meteorological Department
	Police
	Provincial Communication and Works
	Provincial Food Departments
	Provincial Health Departments
	Provincial Relief Commissioners
	Provincial Agriculture and Livestock Departments
	Rescue 1122
	Space and Upper Atmospheric Research Commission (SUPARCO)
Recovery & Reconstruction	
	Earthquake Reconstruction and Rehabilitation Authority (ERRA)
	Provincial Irrigation Departments

Table-2. Government Institutions currently working on DM (Source: National Disaster Risk Management Framework Pakistan, 2007).

4. Disaster Management Strategy, Policy, and Plan

A) National Strategy for Disaster Management:

The Calamity Act of 1958 was mainly concerned with organizing emergency response. A system of relief commission rate at provincial level was established. An Emergency Relief Cell (ERC) in the Cabinet Secretariat was responsible for organizing disaster response by the federal government. The awareness of policy makers, media, civil society, NGOs, UN agencies and other stakeholders remained low about disaster risk management and the Country as a whole lacked a systematic approach towards disaster risk management. The loss of life and property and the challenges that were faced in the aftermath of October 2005 earthquake affecting Azad Jammu and Kashmir and the KP province exhibited the need for establishing appropriate policy and institutional arrangements to reduce losses from disasters in future.

The need for strong institutional and policy arrangements has been fulfilled with the promulgation of National Disaster Management Ordinance, 2006. Under the Ordinance the National Disaster Management Commission (NDMC) has been established under the Chairmanship of the Prime Minister as the highest policy making body in the field of disaster management. As an executive arm of the NDMC, the National Disaster Management Authority (NDMA) has been made operational to coordinate and monitor implementation of National Policies and Strategies on disaster management. The new system envisages a devolved and de-centralized mechanism for disaster management. Accordingly, Provincial Disaster Management Commissions (PDMCs) and Authorities (PDMAs) have been established while similar arrangements have been made in AJ&K and Northern Areas. The District Disaster Management Authorities (DDMAs) have been notified across the country. The DDMAs are going to be the linchpin of the whole system and would play the role of the first line of defense in the event of a disaster.

The National Disaster risk Management Framework has been formulated to guide the work of entire system in the area of disaster risk management. It has been developed through wide consultation with stakeholders from local, provincial and national levels. The Framework identifies National Strategies and Policies for disaster management. Nine priority areas have been identified within this framework to establish and strengthen policies, institutions and capacities over the next five years: These include:

- Institutional and legal arrangements for DRM
- Hazard and vulnerability assessment.
- Training, education and awareness.
- Disaster risk management planning.
- Community and local level programming.
- Multi-hazard early warning system.
- Mainstreaming disaster risk reduction into development.
- Emergency response system, and
- Capacity development for post disaster recovery.
- The NDMA has already embarked upon a five year development program to implement the above nine priority areas. For the purpose, the NDMA in collaboration with international donor agencies has already secured commitments for the provision of 58 million dollars.

Source: **http://www.ndma.gov.pk/new/aboutus/SDM.php**

B) National Disaster Risk Reduction Policy

Disaster risk reduction interventions were being carried out in the country by different departments / agencies in isolation at national, province and district levels. There was a strong need to give them directions and sound guidelines to align their activities in line with the true spirit of National Disaster Management Act, 2010 to counter the threats of disasters faced

by the country. NDMA, being the lead focal agency for disaster preparedness and management, has therefore, embarked upon formulation of a comprehensive National Disaster Risk Reduction Policy through wider consultations with all stakeholders including all provinces, state of AJ&K and regions. This policy covers disasters risk reduction in a more holistic way and introduces a proactive and anticipatory approach by laying special emphasis on risk assessment, prevention.

Mitigation and Preparedness.

The policy shall promote priority measures to ameliorate existing vulnerabilities to hazards and ensure that future development initiatives add resilience. The policy also seeks to provide guideline for timely, dedicated and adequate investment on hazard mitigation and preparedness interventions at all levels which will not only substantially reduce the disaster risk but also the consequential damages & economic cost associated with response, recovery and rehabilitation. The approval of the policy by the National Disaster Management Commission on 21st February 2013, headed by the Prime Minister of Pakistan, is a landmark achievement and milestone of institutional strengthening of NDMA toward creation of a vibrant disaster management structure across all the public governance tiers. Effective implementation of the policy would in fact mean beginning of new era where the nation could feel resilient from the shocks of frequent disaster.

Source: **http://www.ndma.gov.pk/new/preparedness/ndrrpolicy.php**

C) National Disaster Management Plan (NDMP)

In March 2010, the NDMA formulated the National Disaster Response Plan (NDRP) identifying specific roles and responsibilities of the relevant stakeholders in emergency response including Standard Operation Procedures (SOPs).The plan aimed at enhancing the capacity of the country to prepare for and respond to disasters by defining the measures to be considered necessary for disaster management and risk reduction in line with the provision of the National Disaster Management Act (Chapter II, Section 10), was finalized in June 2012.The overall NDMP is a

comprehensive plan, having a total investment cost of USD 1040.9 million (PKR 92.02 Billion with 1 USD = PKR 88.4), consisting of the “Main Plan” document along with three supporting volumes besides the Executive Summary, which identifies macro level hazards and risk assessment, development of the multi hazard early warning system to reduce the vulnerability to disasters by enhancing and strengthening the early warning capacity, identification of the roles and responsibilities of the stakeholders, including federal, provincial and district governments, community organizations, NGOs, businesses, and individuals who are involved in the disaster management.

The Community Based Disaster Risk Management (CBDRM) approach, in view of its universal reorganization and importance in DRM planning, has been given due place in the Plan. Based on pilot activities tested in different hazard contexts and social settings, best practices and guidelines have been documented in the Plan to serve as models for future CBDRM activities in Pakistan. The Plan also provides strategic direction for systematic human resource development in the field of disaster management and the operational plan for the National Institute of Disaster Management (NIDM).The components of NDMP published in one main document with three supporting volumes, besides the Executive Summary, are entitled:

- National Disaster Management Plan Main Plan
- Human Resource Development Plan on Disaster Management Vol. I
- Multi-Hazard Early Warning System Plan Vol. II
- Instructors’ Guidelines on Community Based Disaster Risk Management Vol. III

Source: **http://www.ndma.gov.pk/new/preparedness/ndmp.php**

5. Budget Size on National Level

For year 2014-205, NDMA budget is 169.417 million PKR which will be used for handling various phases of disasters (Source: National

Progress Report on the Implementation of Hyogo framework for Action (2013-2015).

6. Progress of the Hyogo the Implementation of Hyogo Framework for Action (HFA)

National Progress report on the implementation of the Hyogo Framework for Action (2013-2015), A National HFA Monitor update published by Prevention Web, last updated on 12 March 2015. In Hyogo Framework for Action 2005-2015, for implementation of 10 preventions which highlighted in NDMP for next ten years (2012-2022), the following strategic goals, actions and future outlooks defined:

A) Strategic Goal Areas

1. The more effective integration of disaster risk considerations into sustainable development policies, planning and programming at all levels, with a special emphasis on disaster prevention, mitigation, preparedness and vulnerability reduction.

Outcomes Statement

Disaster Risk Reduction (DRR) Policy, outlining Pakistan's objectives, priorities and directions for reducing risks from upcoming challenges of disaster management, was approved by the National Disaster Management Commission headed by the Prime Minister of Pakistan on 21st February, 2013. The policy promotes DRR friendly development planning while focusing on risk knowledge by development of risk and vulnerability atlas / index at national and local level, awareness raising on DRR, climate change adaptation measures, disaster risk insurance, and community based disaster risk management approaches, etc.

In line with the policy parameters, National Disaster Management Plan for 10 years (2012-2022) was also formulated and approved by the NDMC. The plan, which covers the complete spectrum of disasters including: pre, during & post disaster phases, would steer the institutional

and technical direction of disaster risk management in Pakistan. It comprises of the following four components: a) National Disaster Management Plan; b) Human Resource Development Plan on Disaster Management; c) National Multi-Hazard Early Warning Plan; & d) Instructors' Guidelines on Community Based Disaster Risk Reduction (CBDRM). Now the next step that is implementation of the Plan has been taken. In this connection a dedicated Unit within NDMA has been established to track the implementation of the Plan at all levels. In view of high scale of effective contents & interventions proposed in the Plan and continuous follow up by NDMA, a few projects under the NDMP stand already approved/under approval by the concerned agencies. These include in- particular the following:

a) Short & Medium Range Forecasting (all four provinces, federal capital)

b) Project for Capacity Building of DRM Institutions in Pakistan

c) Up gradation of Karachi Weather Surveillance Radar

d) Satellite based Integrated Flood Alert System for flash floods

e) Human Resources Development through Master Degree & PhD Programs

2. The development and strengthening of institutions, mechanisms and capacities at all levels, in particular at the community level, that can systematically contribute to building resilience to hazards.

Outcomes Statement:

Progress on the capacity building of dedicated institutions for disaster management at national, provincial and district levels through provision of human and material resources continues. The NDMA is undergoing process of reorganization by creation of new sanctioned posts, wings and strengthening of its existing Wings, NIDM and Media Cell. The annual budget of NDMA for Financial Year 2014-2015 has been increased to meet the emerging demand of human and financial resources from PKR 93 million in 211-12 to PKR 169.417 for the current fiscal year. Similarly the provincial and regional governments have been urged to enhance the capacities of provincial/ regional as well as district level disaster management authorities, by allocating specific budgetary allocation in the annual budgets as well as dedicated budget line have also been introduced

to enable the authority to effectively undertake Disaster Risk Management (DRM) related activities.

The Emergency Service (Rescue 1122) is now the executive arm of the provinces for emergency relief services wherever it is available. The Province of Khyber Pakhtunkhwa has also established Emergency Service (Rescue-1122), Balochistan, Sindh, Azad Jammu & Kashmir and Gilgit-Baltistan have also notified establishment of Emergency Services on the model of Punjab Emergency Services & Chitral (lead is FOCUS). NDMA is enhancing the capacity building of the existing six USAR teams. Earlier raising of two dedicated Urban Search & Rescue Teams (USAR) at Karachi and Islamabad, two more USAR teams one for Pakistan Army and one for District Mardan (Province of Khyber Pakhtunkhwa) have been raised.

Emergency Operations Centers at National, Provincial, and District levels have been established and are being strengthened with improved infrastructure (i.e. equipment) and skilled manpower. The National Institute of Disaster Management (NIDM) has been established in a temporary premises. Programs (CBDRM) programs are being promoted under the NDMP and various stakeholders including International NGOs and local NGOs are implementing multi-dimensional CBDRM programmes in various regions up to the local and community level. NDMA has formulated instructors' guidelines on CBDRM from a multi hazard perspective. (NDMA) in collaboration with World Food Programme (WFP) has initiated a warehouse network called "Humanitarian Response Facility (HRF)" at nine strategic locations across the country.

3. The systematic incorporation of risk reduction approaches into the design and implementation of emergency preparedness, response and recovery programmes in the reconstruction of affected communities.

Outcomes Statement:

ERRA continued implementing reconstruction and rehabilitation programmes in the earthquake affected areas of Khyber Pakhtunkhwa and Azad Jammu & Kashmir. The NDMA ensured that all projects and activities in relief as well as Early Recovery undertaken by all stakeholders including

the federal and provincial governments, UN and international community, NGOs and private philanthropy, during all emergencies, comply with DRR standards and guidelines outlined in the NDMP.

NDMA devised an early recovery programme for restoration of life in the disaster hit area which paved way for resilient recovery. The Floods 2014 caused substantial damage to crop (about 1 million acre, houses (129000), community infrastructure and livelihood of population in affected areas. NDMA in collaboration with UNDP and other partners carried out recovery needs assessment (R&A) which put estimates of recovery & reconstruction in aforesaid sectors as US dollars 439 million. That includes US dollars 56 million for adding resilience through a variety of structural and non-structural measures

B) Priority for Actions:

1) *"Ensure that disaster risk reduction is a national and a local priority with a strong institutional basis for implementation.*
2) *Identify, assess and monitor disaster risks and enhance early warning*
3) *Use knowledge, innovation and education to build a culture of safety and resilience at all levels*
4) *Reduce the underlying risk factors*
5) *Strengthen disaster preparedness for effective response at all levels"*

C) Future Outlook Areas:

1) *"The more effective integration of disaster risk considerations into sustainable development policies, planning and programming at all levels, with a special emphasis on disaster prevention, mitigation, preparedness and vulnerability reduction.*
2) *The development and strengthening of institutions, mechanisms and capacities at all levels, in particular at the community level, that can systematically contribute to building resilience to hazards.*
3) *The systematic incorporation of risk reduction approaches into the design and implementation of emergency preparedness, response and recovery programmes in the reconstruction of affected communities."*

Source:
http://www.preventionweb.net/files/42312_PAK_NationalHFAprogress_2013-15.pdf

Hyogo Framework for Action 2005-2015	National Intervention in Disaster Management
HFA-1: Ensure that disaster risk reduction is a national and a local priority with a strong institutional basis for implementation	Intervention-1: Establish the institutional and legal system for disaster management
	Intervention-2: Prepare disaster management plans at various levels
HFA-2: Identify, assess and monitor disaster risks and enhance early warning	Intervention-3: Establish a national hazard and vulnerability assessment
	Intervention-4: Establish a multi-hazard early warning system
HFA-3: Use knowledge, innovation and education to build a culture of safety and resilience at all levels	Intervention-5: Promotion of training, education and awareness in relation to disaster management
	Intervention-6: Strengthen awareness program on disaster risk reduction at local level
HFA-4: Reduce the underlying risk factors	Intervention-7: Infrastructure development for disaster risk reduction
	Intervention-8: Mainstreaming disaster risk reduction into development
HFA-5: Strengthen disaster preparedness for effective response at all levels	Intervention-9: Establish a national emergency response system
	Intervention-10: Capacity development for post-disaster recovery

Table-3. The Relation between National Intervention and the Hyogo Framework of Action *(2005- 2015) (*Source: National Disaster Management Plan (NDMP), Main Volume, 2012).

7. Recent Major Projects on Disaster Risk Reduction

A) Pakistan Floods 2014: Recovery Needs Assessment and Action Framework 2014-16:

This Recovery Needs Assessment describes the strategic basis for a response to the 2014 floods in Pakistan. This framework document identifies and estimates the cost steps to bridge the gap between relief and rehabilitation by concentrating on interim, transitional and immediate

actions to assist the affected population restore their lives and livelihoods. The RNA priorities four sectors: Housing, Agriculture, Livelihoods and Community Infrastructure, with Disaster Risk Reduction and “build back better” as the overarching themes. The RNA caseload and cost estimates are based on the data collected by the governments of Punjab and AJ&K through the district governments and relevant line departments. Both the governments have put in place multiple levels of validation and triangulation to ensure the credibility of needs and recovery costs. In addition, the teams of NDMA and relevant UN agencies (FAO, ILO, UNDP, UN-Habitat and WFP) carried out spot checks to selected locations to verify the data reported by the provincial governments.

The projected timeframe for these activities is up to 24 months. The framework projects the costs of two approaches, “replacement” and “build-back-better”. The slightly more focused action plans for the priority areas of housing, agriculture, non-farm livelihoods and community physical infrastructure are included as annexes, as well as an annex on Disaster Risk Reduction. The RNA implementation will follow the guiding policies of early recovery and will be led by the federal and provincial governments: NDMA at the federal level and PDMA Punjab and SDMA for the province of Punjab and AJ&K, respectively. The cash transfers and grants, already underway for certain interventions, will use the government transmission channels and the extensive verification processes already put in place by the Governments of Punjab and AJ&K. The technical assistance and additional support, especially for building community resilience across the priority sectors, may be provided by the international community using appropriate implementation channels and strategies in coordination with the NDMA, PDMA and SDMA.

Source:
http://www.ndma.gov.pk/new/Documents/Recovery_Needs_Assessment.pdf

B) Multi-sector Initial Rapid Assessment (MIRA) Report (PDMA/ NDMA / HCT Punjab Floods 2014)

In September 2014, the Government of Pakistan requested support from the Humanitarian Country Team in Pakistan (NGOs and UN) to undertake a joint rapid assessment in Punjab following flooding impact. Although a number of districts in Punjab were impacted by the floods, five districts of varying degrees of flooding were identified for data collection- Hafizabad, Mandi Bahauddin, Chiniot, Jhang and Multan. A sample of 541 villages were visited to gather data from key informants to provide a snapshot of the impact, possible areas for immediate intervention, and to understand the impact of any assistance provided to date. The enumeration teams were comprised of local government, NGO, and UN staff members; of the 63 enumeration teams, more than 50% had a female enumerator. One female enumerator is recommended per team; however, many of the supporting institutions and organizations reported they had limited numbers of female staff.

The methodology used was the multi-sector initial rapid assessment (MIRA), which has been developed with the NDMA and provincial level disaster management authorities (DMAs). This method aims to use a rapid technique through interviews with key informants, for example, Imams, Maliks, teachers, lady health workers, and others, to gather a basic understanding as to the impact of the crisis and the populations' condition as a result. The information provided herein is only relevant to the areas within each district impacted, and in no way reflect any area of the rest of the district. The enumeration teams found massive impact to agriculture; a number of real and potential public health concerns – for both the affected population and the non-affected populations; and evidence of recovery activities by the communities themselves. The total population affected by the flood is estimated to be approximately 1.8 million in Pakistan (extrapolated from SUPARCO flood extent satellite imagery layered on the 2011 Land scan dataset – based on the maximum flood extent)
Source: **http://www.ndma.gov.pk/new/Documents/mira_2014.pdf**

C) Disaster Information online System

Pakistan Disaster Information is a nationally owned, open source data platform that aims to enable the mandated agencies to share their geospatial datasets and maps on hazards and exposure. In order to ensure that risk information is widely accessible to all decision makers, this platform will also host newly developed datasets, hazard and risk information.

D) Development of National Platform for Risk Assessment and Catastrophe Financing Pakistan Programme

This project is being supported by Global Facility for Disaster Reduction and Recovery (GFDRR), World Bank and Department for International Development (DFID) under the "Development of a National Platform for Risk Assessment and Catastrophe risk financing Programme in Pakistan" which aims to implement risk identification and financing framework that will encourage data-driven analysis and lead to a reduction in disaster risk over the long term.

E) Evidence-based Risk Analysis

This programme will test the use of evidence-based risk analysis in public policy making through a series of interventions to

1) Provide risk information
2) Train users
3) Improve decision-making systems in disaster risk management.

Source: **http//: www.disasterinfo.gov.pk**

8. ADRC Counterpart

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