



PROVINCIAL DISASTER MANAGEMENT AUTHORITY SINDH



Multi Hazard Contingency Plan 2013

Government of Sindh
Rehabilitation Department
Karachi
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CONTENTS

S.No.	Chapter	Item	Page
01.		Executive Summary	i
02.	One	Overview of Sindh Province	1
03	Two	Hazards and Vulnerabilities in Province of Sindh	4
04	Three	Disaster damages occurred during 2010,2011 and 2012	8
05	Four	Disaster Scenario and Planning Assumptions	9
06	Five	Preparedness Planning:	14
07	Six	Coordination and Partnership	27
08		Contact numbers of stakeholders of Commissioners / Deputy Commissioners	Annexure –A
09		List of Active NGOs / CBOs in the Province	Annexure – B
10		Preparedness actions and plan updating by PDMA / Rehabilitation Department	Annexure-C
11		PDMA Budget for the year 2013	Annexure- D
12		Need and Gap Analysis for District Administrations	Annexure - E

Executive Summary

Sindh is prone to a number of disasters. Most of these disasters are categorized as natural disasters. The common ones are floods, cyclone, drought, earthquake, windstorm, extreme temperatures, famine, epidemics, and insect infestation. Flood is the most frequent disaster and cause damage to crops, homes and livelihoods, threat to human lives and destruction to public infrastructure. Monsoon is the common cause of floods. Since 1926 significant floods have been occurred 50 times. Cyclone visits every 3rd or 5th year. The frequency of Earthquake increased. The Earthquake 2001 inflicted loss to 12 loss of life, 45000 houses fully / partially damaged in all loss of Rs. 2.4 billion reported. Earthquake in April 2013 jolted the entire province at 5.5 Richter Scale Drought remains serious for almost 5 years – 1999/2003. Besides, man-made disaster also faced by country like accidents, suicide attacks, political disturbances and attacks on humanitarian assistance provider and international agencies. Recently fires taking place in urban and rural areas.

Indus River Basin System is currently hit by floods, mostly caused by heavy summer monsoon rains in the catchments. Different floods risk zones in the prone areas can be identified with the help of information on terrain, volume of water discharge and drainage pattern. Satellite images provide the means to efficiently estimate floods inundated areas over large regions and assist in disaster relief operations.

Based on the previous years' experiences, there is wet and dry season cycle that round every 5 to 7 years. The flood 2007 triggered by monsoon pressure which caused 244 deaths, displaced 2,402,679 people, 41,236 livestock perished, house damaged 204,617 and cropped area damaged 911,986.

The floods use to hit the Province on regular basis with intervals. The highest frequency was recently recorded for flood during 2010, as it affected entire province. Flood / rains have been observed in recent times during 1992, 1995, 2010, 2011 and 2012 cumulative were in shape of loss of life approximately 1200, animal perished 0.650 million, houses damaged 3.0 million, cropped area damaged to 5.3 million acres. Besides, huge loss nearly 1,000 billion inflicted on public infrastructures like roads, irrigation & Drainage net work and buildings of various use. Overall, 20 million people, almost half of Sindh's was affected / displaced.

These circumstances prompted to prepare multi-hazard contingency planning for next (monsoon 2013) to avert similar situation of year 2010, 2011 and 2012 during next flood/ rain season by providing food and non-food assistance, so as, to prevent hunger and malnutrition. This operation will need about Rs. 3 billion to sustain 1,000,000 house hold for three months. The support is also expected from Provincial Government Organizations, NDMA, UN Agencies, INGOs/ NGOs and Volunteer Organizations.

CHAPTER ONE

Overview of Sindh Province

GEOGRAPHY

The Province of Sindh is located in the South- Eastern part of the country (between Lat 23-35 and Lat 28- 30 N). Its gross geographical area is 140,914 Sq. km which is 18% of the country. The geographical area is 14 million hectares out of which almost 8.0 million hectare is cultivable, and the remaining area is not available for cultivation mostly lying in the northern hills of Khirthar Range, eastern desert of Thar and Achharo Thar and the riverian area. Sindh's 60% land area is arid. Annual average precipitation is between 50 to 80 mm inches yearly, but the year 2011 and 2012 were abnormal, when rain density was between 550 to 1600 mm respectively. The mighty River Indus flows in the middle of the province. There are seasonal streams which become active in the monsoon season, they emanate from the Khirthar hill range from west of province, which fallout in River Indus and Arabian Sea. The boundaries of Sindh are touched by Arabian Sea in South, India in east and Punjab in north and Balochistan in west.

The province took its name from River Sindh (as per the Greeks). Predominantly, it is an agricultural and pastoral economy. Lately minerals have been identified like petrol, gas, coal, granite and cut stone etc. These are being exploited which contribute substantially to the national produce. Besides the province have industries of various kinds which include textile, chemical, cement, steel and others. Most of the industries are located in three Cities- Karachi, Kotri/ Hyderabad and Sukkur. There are two modern sea ports: Karachi Port and Bin Qasim Port both of which are situated in Karachi and serve the entire country including Afghanistan.

GEOLOGY

The geology of Sindh is divisible in three main regions, the mountain ranges of Khirthar, Pab containing a chain of minor hills in the west and in east it is covered by the Thar Desert and part of Indian Platform where the main exposure is of Karoonjhar Mountains, which is famous for Nagar Parkar Granite. In the north Sindh is enquired by rocks of Laki range extending to Suleiman range and its southern most part is encircled by the Arabian Sea. The rocks exposed in this area belong to upper Cretaceous which are recent in age. The sub-surface rocks are about 20,000 feet thick and belong to Cretaceous and Pre-Cretaceous periods. Mostly the rocks are of sedimentary origin of clastic and non-clastic nature and belong to marine, partly marine and fluvial depositional environments.

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

SURJANI FAULT: N-S Trending. Located at west of Larkana. It cuts Quaternary deposits. The maximum magnitude of the earthquake associated with the fault is of the order $M=6.1$ on Richter scale.

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

PAB FAULT: NN-W Trending. This is located in the eastern part of Pab range. The maximum magnitude of the earthquake associated with fault is of the order M=7.0 on Richter scale.

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

DEMOGRAPHY

The 1998 Census of Pakistan indicated population of 30.4 million; the current population is projected for 2012 at 44.8 million with male 23.7 million and female 21.111 using a compound growth rate of 2.8% since then. With just under half being urban dwellers, mainly living in Karachi, Hyderabad, Sukkur and Larkana. The literacy ratio is 45.29%- male 54.50% and female 34.78%. Rural area 25.73% - male 37.89% and female 12.23% whereas, urban - 63.72% - Male 69.75% & female 56.66%. Agriculture & fisheries workers counts 34.84% out of which 65.56% is rural population, Elementary occupation and service sector and business count 43.65%.

SOCIETY

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

Sindh's population is predominantly Muslim. The province of Sindh is also home to nearly all of Pakistan's Hindus, numbering roughly 2.0 million, although most Sindhi Hindus migrated to India at the time of the partition. Smaller groups of Christians, Paresis or Zoroastrians, Ahmadis, and a few members of the Jewish community can also be found in the province.

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

ECONOMY

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

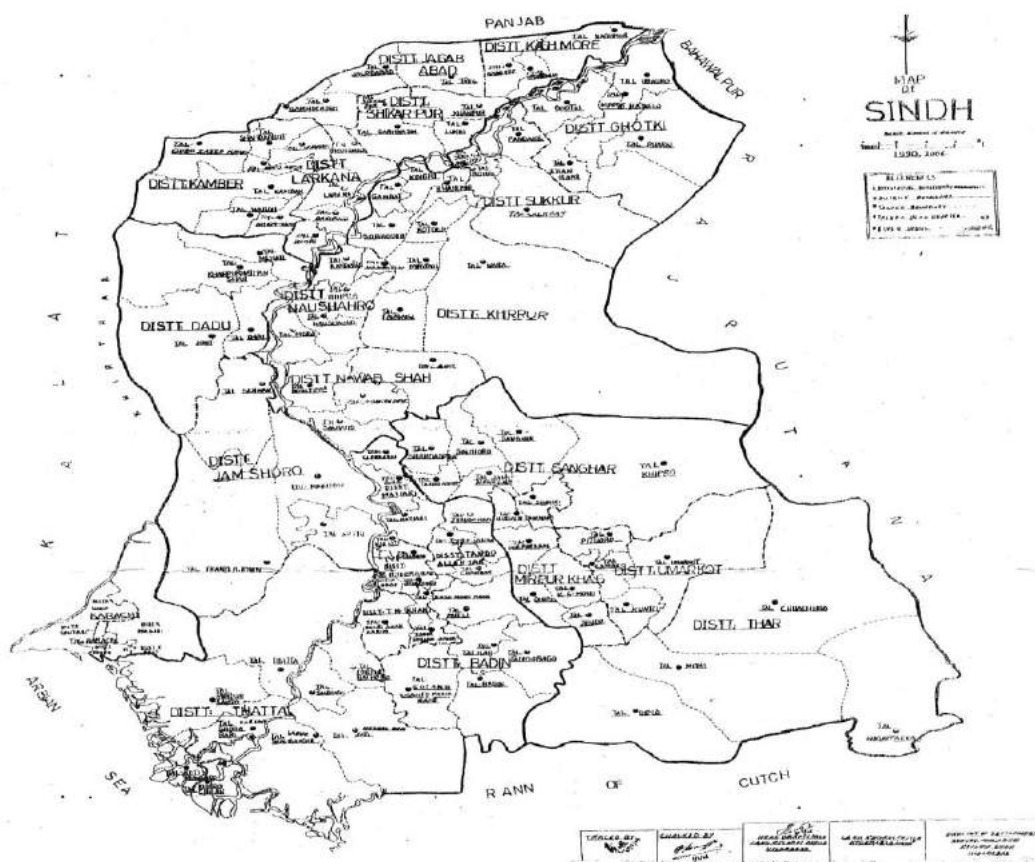
Sindh's principal crops are wheat, rice, cotton, oilseeds, sugarcane, vegetables and fruits. Sheep, cattle, camels, and poultry are raised, and there is a healthy fishing industry as well. Manufacturing industries are concentrated in Karachi, Hyderabad, Nooriabad, Kotri and Sukkur. They produce textile products, cement, cardboard, chemicals, electric power supplies, rail-road equipment, machinery and other metal products.

SHELTER

In 1998, there were 5.022 million households in Sindh, with average household size 6.0 persons and occupancy at 3.3 persons per room. Based on that population projected for 2012 is to 44.8 million. The projected house hold is about 7.5 million. The overall housing stock comprised 52 percent Katcha houses mostly without proper water supply, 48 percent semi-pacca houses mostly without planned sanitation or sewerage system. The majority of rural housing is Katcha (mud), with minimal water supply and sanitation or drainage services. Almost half of the urban population is living in slums and Katchi Abadis, with inadequate housing and living conditions. **The number of houses damages during floods 2010, rains 2011 and 2012 reported to 876249, 1503098 and 462725 respectively i.e. almost 40% of the total houses.**

ADMINISTRATIVE SYSTEM

Consequent upon the revival of Commissionerate system, Sindh province is administratively governed through 5 divisions namely Karachi, Hyderabad, Mirpurkhas, Sukkur and Larkana. The 5 divisions, headed by Commissioners are further sub divided into 27 districts which are governed by Deputy Commissioners. Karachi being a metropolitan city cum Division is parallely administered through Karachi Metropolitan Corporation (KMC) followed by its sub-categorization into District Municipal Corporations (DMCs). **There are 119 Talukas with 1111 union councils across Sindh.** The number of villages (rural settlements) was **66,923 as per census of 1998 within 5871 Dehs (small revenue unit).**



CHAPTER TWO

Hazards, Vulnerabilities and Disaster Risks in Province of Sindh

The province of Sindh has historically suffered from both natural and human induced disasters. The high level of risk is mainly from floods/ heavy rains, cyclones in coastal area, sea intrusion, droughts, earthquakes, epidemics etc.

FLOODS/ RAINS

The topography of Sindh Province is almost flat and located at the bottom of Indus basin. The surplus water of Indus River and its tributaries including monsoon has to pass through Sindh. Hill torrents which emanate from Balochistan are also adding up to the pressure on both accounts, till its outfall in the Arabian Sea. The River Indus in Sindh is dangerous, because it flows at ridge. In case of breach the out flowing water cannot be drained back into the river at any point. The Indus River is also popular for changing its course.

High floods since the creation of modern irrigation network in 1932 are being monitored. The river Indus is contained by flood protection embankments, which are 1400 miles long, so as to protect irrigation network emanating from three barrages having 12.8 million acres of command area. Besides, there is a large network of surface drainage and 6000 public tube wells, roads and railways network, cities / towns, rural settlements etc. The high floods occurred during 1942, 1956, 1957, 1958, 1973, 1975, 1976, 1979, 1992, 1994, 1995, 2003, 2005, 2007, 2010, 2011 and 2012.

CYCLONE

The coastal districts have also been adversely affected by heavy rainfall and cyclones. The three coastal districts - Karachi, Thatta and Badin, are highly vulnerable to cyclone emergency. The districts of Thatta and Badin have been badly affected on several occasions. Cyclones not only wiped out the human settlements and resulted in the huge losses of human and animal lives, but they also destroyed and damaged fishing boats, therefore badly affected the livelihood of the majority of residents of these two districts.

Historically, the tropical cyclones formed over the Arabian Sea and making landfall at the coastal areas of Sindh. Major cyclones during the last 100 years which hit Sindh were in May 1902, June 1926, June 1964, November 1993, June 1998, May 1999 and June 2007 (Cyclone– 02A). The Cyclone Yemen in 1999 hit three coastal districts of Sindh, where 244 loss of life, 40177 animals perished, villages affected to 1449, houses damaged to 29873, population affected 0.5 million was reported. Damaged infrastructure was 45 PHED facilities, 16 Health facilities, Educational institutions 334 and 208 kms of roads. Loss in financial terms was about Rs. 3.231 billion.

Keti Bunder town was wiped out four times in recent history. The cyclones of 2010 (PHET) and 2011(KIELA) also emerged during few years back, out of which PHET caused significant damages in district Thatta.



TSUNAMI

The Sindh province can be a recipient of a tsunami disaster. A tsunami disaster occurred in November 1945 at Makran coast in Balochistan Province. It produced sea waves of 12-15 meters height that killed about 4,000 people. Although Karachi was away from the epicentre, but still it experienced 6 feet high sea waves which affected harbour facilities. This usually happens during the months of March , April and May.

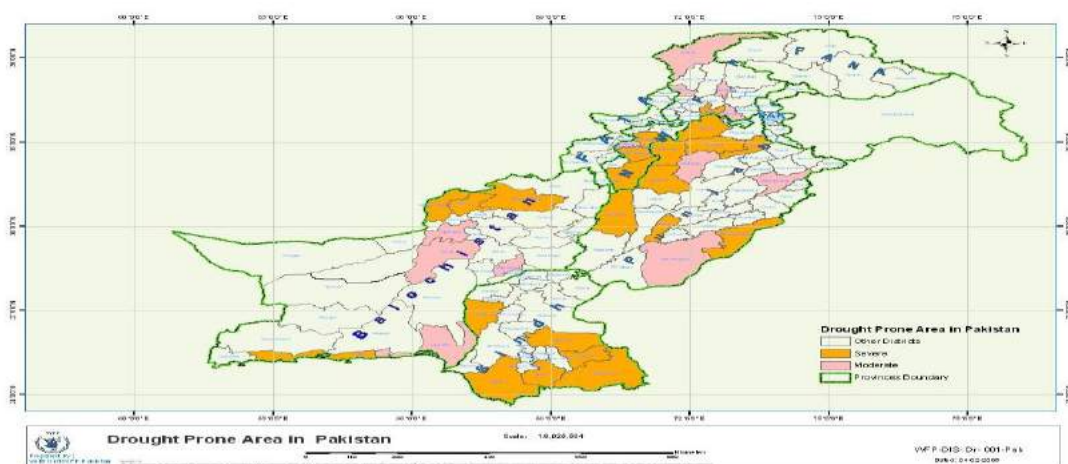
The effects of tsunami of December, 2004 were also felt along the Pakistan coastline. Abnormal rise in water detected by tide gauge station at Keti Bander area created panic in the coastal population including Karachi.

DROUGHT

Sindh geographically can be divided into four zones namely eastern desert, western hilly / mountainous area, coastal area in the south and irrigated agriculture area in the middle. Its 60% area is arid receiving rainfall on average of 5 inches during monsoon and very little in December & January. The arid area people depend upon the scanty rainfall raising livestock and millet crops. The failure of rainfall and global climatic effects reduce the water supplies in Indus River System (IRS). Sindh being at the end of the system usually takes the brink. Besides, two-third of ground water is brackish and 80% agricultural land is affected by water logging and salinity.

People arid area usually move to canal commanded area but low flow in the river Indus from 1998-2002 created havoc in the entire province. Historically, Sindh faced the worst drought situation during 1871, 1881, 1899, 1931, 1942 and 1999. The last one persisted till the year 2002. Around 1.4 million people, 5.6 million cattle head and 12.5 million acres cropped area were affected. The ground water depleted to 30-40 feet, and the quality of life became poor. As a result of malnutrition diseases erupted. The cultivated area reduced in 1998 from 3.415 million acres to 2.611 million acres. The most affected was wheat area 22% and rice almost 35%. Besides, cultivated area grew poor crops, which created food scarcity all over Sindh, except for a couple of districts. There was tremendous drop out (about 27%) in schools, due to drought situation.

During the year 2012 also the drought situation was going to severe, but late monsoon rains saved the area from devastation, even than about 15% population of Thar moved to barrage command area with their livestock in search of livelihood. The uncertain weather situation during monsoon 2013 due to untimely rains may affect crop sowing in Thar and Kohistan, which is expected put sufferings of human and animal population.



EARTHQUAKE

The recent earthquake that affected Sindh desert area was recorded in the year 2001 in Tharparkar district and the bordering Badin District was also badly affected. Due to this earthquake 12 people lost their lives, 115 persons got injured, 1989 houses were fully damaged, 43,643 houses partially damaged and 1406 public sector buildings got damaged. Loss in financial terms was recorded around Rs. 2.4 billion.

A geological tectonic line runs under Karachi through Khirthar Hills / Mountains to north-west of Sindh and Thar Desert, due to which Sindh has risk of a major earthquake in the future. The latest earthquake occurred on 16th April 2013 in Iran whose effects were reached in Pakistan, damages happened in Balochistan. It was recorded in Karachi at Richter scale at 5.5 which strongly jolted the entire province.

SEA INTRUSION

Other than drought and cyclone / tsunami coastal area of Sindh is also badly affected by sea intrusion. Thatta and Badin districts are among such area. The out flow of water downstream Kotri Barrage declined which resulted in massive sea intrusion in coastal area of both the districts. This intrusion wrecked havoc not only on human and fish population, but also damaged badly agricultural land. The sea intrusion is losing sea food market every year due to depletion of fish and shrimp population in the area. By one estimate coastal district of Thatta and Badin's 9 Taluka, 87 Dehs, 47 Irrigation Channel are affected. Area affected is 1.2 million acres. Besides there are other disasters:

- **Epidemics havoc**
- **Environmental Degradation**
- **Accidental fires**

The relative severity of various vulnerabilities / hazards per District-wise in Sindh is given as under:

S.NO	DISTRICT	DROUGHT	FLOODS / RAINS	CYCLONES	TSUNAMI	EARTHQUAKE	LANDSLIDES	COMMUNICABLE DISEASES	FIRE	LOCUSTS / PESTS	CRISIS SITUATION	INDUSTRIAL & MINES	REFUGEES & IDPS	COMMENTS
1.	Karachi	4	3	4	4	3	1	3	5	---	5	5	3	
2.	Thatta	4	4	4	4	2	---	4	2	---	2	1	3	
3.	Badin	4	5	5	4	3	---	4	1	1	2	1	4	
4.	Tharparkar	5	3	3	3	4	---	4	2	4	3	1	1	
5.	Umerkot	5	3	2	1	2	---	3	2	3	1	1	2	
6.	Mirpurkhas	4	3	2	2	2	---	3	3	1	1	1	1	
7.	Tando Allahyar	3	4	2	1	2	---	3	3	1	1	1	1	
8.	Tando M.K.	3	4	2	1	2	---	4	2	1	1	1	1	
9.	Hyderabad	3	3	1	1	1	---	3	3	1	3	3	3	
10.	Mitiari	3	4	1	1	1	---	3	1	1	1	1	1	
11.	Nawabshah	4	4	1	1	1	---	3	2	3	1	2	3	
12.	Naushahro Feroze	3	4	1	1	1	---	4	1	1	1	1	1	
13.	Khairpur	4	4	1	1	1	---	3	2	4	1	2	1	
14.	Sukkur	3	3	1	1	1	---	4	2	4	2	2	1	
15.	Ghotki	3	4	1	1	1	---	3	3	4	1	3	3	
16.	Shikarpur	2	3	1	1	1	---	3	2	1	3	1	2	
17.	Kashmore	2	5	1	1	1	---	4	1	1	3	1	3	
18.	Jacobabad	3	5	1	1	2	---	4	1	1	4	1	3	

19.	Larkana	3	3	1	1	2	---	3	1	1	3	1	2	
20.	Kambar-Shahdad kot	5	5	1	1	3	---	3	1	1	3	1	3	
21.	Dadu	5	4	1	1	3	---	4	1	1	3	2	3	
22.	Jamshoro	5	3	1	1	3	---	2	2	1	1	2	1	
23.	Sanghar	4	4	2	1	1	---	2	1	3	1	1	3	

SCORING KEYS:

- | | |
|---------------------|----|
| I. <i>Very High</i> | 5 |
| II. <i>High</i> | 4 |
| III. <i>Medium</i> | 3 |
| IV. <i>Low</i> | 2 |
| V. <i>Very low</i> | 1 |
| VI. <i>Dots</i> | NA |

NB: Ranking based on deliberation with staff from Relief Commissioner's Office and PDMA Sindh.

The main factors contributing to disaster damages:

Structural

- Protective infrastructure against River flood and cyclone
- Blockage of flood water
- Inadequate surface drainage systems
- Integral response capacity

Non- Structural

- Latent poverty levels
- Fragility of rural livelihood patterns viz lack of land and productive resources ownership;
- Vulnerability of livestock to disasters

CHAPTER THREE

Disaster damages occurred during 2010, 2011 and 2012 flood / rain emergencies

The global climatic change has put its impact on Pakistan's weather conditions. Sindh Province is at the lower side and having over 350 kms topographically flat gradient greatly suffers as evident from the damages put by River Flood in 2010, Rains of 2011 in south and rains during 2012 in North Sindh. The rain density is almost ten times more than normal. Damage data for three years (2010, 2011 and 2012) is given as under:

S. No	Item	Damages (Year)			Remark
		2010	2011	2012	
01	Population affected	7.3 million	8.6 million	3.174 million	
03	Cropped Area Affected	2.5 million acres	2.3 million acres	0.505 million acres	
04	Houses damaged	0.9 million	1.5 million	0.462 million	
05	Persons died	414 No.	482 No.	288 No.	
06	Relief Camps Estt.	4,632 No.	668 No.	85 No	
07	Persons in camps	1.8 million	0.770 million	0.084 million	
08	Animal perished		0.117 million	2,029 No	

The Damage Need Assessment conducted by the Planning and Development department, further verified by Asian Dev. Bank and World Bank to various sectors of economy is presented as under:

(US \$ in Billion)

S. No.	Sector	Year		
		2010	2011	Remark
a.	Agriculture, livestock and fisheries	160.107	144.64	
b.	Housing	85.465	134.34	
c.	Roads	26.468	35.67	
d.	Irrigation and Drainage	4.763	52.00	
e.	Health	1.258	3.90	
f.	Education	12.014	30.56	
Total:		290.072	453.11	

CHAPTER FOUR

Disaster Scenario and Planning Assumptions:

Flood / RAINS

Last three years experiences brought out that entire province is affected by Flood & Rains 2010 mostly north Sindh coming up to District Dadu, Rains of 2011 which were more than 10 times of normal rains like Badin area's normal rain is about 140 mm, which went up to 800mm, whereas, Tharparkar use to be around 150mm received about 1600 mm. During 2012 the north Sindh again entirely crippled but this time by heavy rains. The rain density normally is 55 mm against which it was 550mm. The damages data is given at page 8.

Based on the recent disaster damages and various relief and recovery intervention / experiences suggested scenarios with planning assumptions are developed for handling the Monsoon 2013.

Scenario 1- Worst Case:

There are three categories of Flood –high, medium and low. The low one is up to discharge of 500,000 cusecs, medium up to 700,000 cusecs and above 700,000 is a high flood level 900000 plus cusecs is super flood. There is no problem in low flood, which controlled by the Provincial Government. Under Medium flood the people living along river usually displaced along with their livestock, also lose crop land. Besides, next season for cropping is delayed. The high flood damages in large are cropped area, displace people and livestock in large number, also damage public and private infrastructure. Most people use to be evacuated to reduce loss of life, livestock. Flash floods mostly occur in Balochistan due to heavy downpour in monsoon season, which cause fast flow of water from mountains carry away livestock, people and destroy public and private infrastructure. The other kind of flash flood is glazier burst in northern mountains. The Flood/ Flash Flood results:

- Displacement of population and livestock
- Loss of life
- Damage/destruction to houses, shops / market places
- Loss of standing crops, household food stocks, seeds and livestock
- Increase in food commodity prices
- Low supply of food commodity items.
- Short of fodder for animals and lack of grazing area to sustain animals
- Malnutrition and disease usually happens mostly in children and expecting mothers
- Damage road / railway net work, other means of communication and disruption in electricity and water supply

Scenario 2

The medium level flood dislocates people in low-lying areas, cropped areas and loss of grazing fields in River Indus System. Thus, for short period affected people need humanitarian assistance.

Scenario -3

There is low flow in River Indus System. Hence, there is no emergency to arise.

Likely Triggers:

These are:

- Excessive snowfall cause higher water flow due to its melting in summer
- Monsoon rains coupled with excessive river flow
- Loss of river water way / channel due to less water flow in lien years and human intervention
- Height and section of Indus River Embankments reduced due to wind erosion and human action(s)
- Raised river bed due to heavy wind erosion
- Encroachments in river belt- construction of small dykes and other obstructions

DROUGHT

The available recorded information reveals that drought cycle was frequent during 19th and early 20th century, almost every ten years. This is reduced with advent of modern irrigation network and improvement in use of modern agriculture technology and seeds. However, nature's vagaries fail human efforts as happened in last drought situation. The scenario is being built for 1999-2002 and 2012 like that delay in melting of snow; required water for Kharif sowing is not available, which would affect cotton, rice and millet crops. The short of food grain further aggravate the situation. It would most affect the poor segment of society in desert, hilly and mountain living population.

Drought is slow on slot its gravity will emerge in May - June with observation of improvement in river flows, filling of storages and rain cover to arid area.

Scenario 1

Hazard (Drought) and resulting emergency

- Displacement of population around 2.0 million
- Loss of life.
- Loss of cattle.
- Loss of standing crops, household food stocks and livestock
- Increase in food commodity prices
- Low supply of food commodity items
- Eruption of disease
- Malnutrition usually happens mostly in children and expecting mothers
- Loss of income generation activities- increase in poverty incidence.

SCENARIO 2

- Displacement of population around 1.4 million
- Around 5 million cattle would be seriously suffer
- Loss of life and cattle.
- Loss of standing crops, household food stocks and livestock
- Increase in food commodity prices
- Low supply of food commodity items
- Eruption of disease
- Malnutrition usually happens mostly in children and expecting mothers
- Loss of income generation activities- increase in poverty incidence.

SCENARIO 3

Shortage of food and fodder mainly in arid areas, which mostly be handled by the Provincial Government.

LIKELY TRIGGERS:

The triggers that may be warning signs are:

- Low rainfall than usual;
- Signs that population in the affected areas is consuming wild grass and plants;
- Large-scale movements of people and livestock to safer places;
- Major increase in prices of basic grains;
- Major decrease in price of livestock;
- Signs of sudden increase in malnutrition;
- Increase in incidence of disease like, hemorrhagic fever, T.B. and Hepatitis;
- News of high mortality of livestock and dried up water points;
- Locust and bird attacks on crops.

CYCLONE

The weather cycles which repeats after 6-7 years and remains for next few years that started from year 2007 and expected to continue for few years. It is caused by Monsoon which is expected to be stronger during 2008, 1999 and 2011 that to hit the coast area and lower part of Sindh. Based on that scenario is developed as under:

SCENARIO

Hazard and resulting emergency:

The cyclone 1999 and 2007 caused rain / flood which put huge loss to life, property and economic losses, with due arrangements these were contained, even these were severe. There is need to make necessary contingency planning, so as, to avert such situation. The scenario is accordingly built as under:

Scenario – 1

Hazard (Cyclone) and resulting emergency

- Displacement of population around 4.0 million
- Loss of life.
- Loss of cattle.
- Damage/destruction to houses, shops / market places
- Damage to public infrastructure- roads, railway, hospitals, telecommunication network, electricity and gas installations
- Loss of standing crops, household food stocks and livestock
- Increase in food commodity prices
- Low supply of food commodity items
- Eruption of disease
- Malnutrition usually happens mostly in children and expecting mothers
- Loss of income generation activities- increase in poverty incidence.

SCENARIO – 2

- Displacement of population around 0.4 million
- Loss of life.
- Loss of cattle
- Loss of standing crops, household food stocks and livestock
- Increase in food commodity prices
- Low supply of food commodity items

- Eruption of disease
- Malnutrition usually happens mostly in children and expecting mothers
- Loss of income generation activities- increase in poverty incidence.

SCENARIO 3:

- There happens low tide affect, which inhibit fishermen approaching high sea, thus lose income.
- Sea intrusion, which damage croplands.

LIKELY TRIGGERS:

These are:

- Monsoon pressure (high tide) and rains.
- Tsunami effect.

RISK ANALYSIS

Based upon the available information and experiences the risk analysis is undertaken keeping in view the category A for Flood / Rain , Cyclone and Drought happened during 2010, 2011 and 2012 as under:

Risk Analysis	Level	Comments
Probability	<p>Level A Likely:</p> <p>Historically Flood cycle repeat after 5 to 7 years, but indicators of 2010, 2011 and 2012 rain and flood give picture that there is strong expectation of high magnitude of monsoon due to global climatic changes.</p>	PDMA / Rehabilitation Department closely monitor the flood forecast through cooperation of PMD and its own Early Warning Network , so as, to attend the emergency.
Consequences	<p>Level B: Major issues:</p> <ul style="list-style-type: none"> • Locally displace people in River Indus and Coastal belt and Kachho area. • Damage to crop area • Loss of livestock • Loss of footstock • Shortage of food items • Rise in food prices • Disease and hunger • Loss of income generation opportunities 	PDMA to make arrangement for rescue and relief in association of all partners including DDMA's , NDMA, Armed Forces, Volunteer Organizations , Civil Society and UN Agencies etc. It would reduce the chances of colossal loss

Overall Risk	<p>High:</p> <ul style="list-style-type: none"> • Loss of human life / bread earner • Loss of livestock • Food shortage due to crop damage • Eruption of infectious disease • Cut of communication line- road and railway, irrigation & drainage network including electricity supply • Damage to schools and health facilities • Market disruption • Increase in poverty incidence 	<p>Necessary risk aversion actions are needed which will protect infrastructure that would help in Government efforts to spend on social sector, which would compliment in achieving MDGs.</p>
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Population at Risk

The population at risk through riverian flood from Gudu to Keti Bunder is expected around 2.0 million, through rains about 1.5 million, because of high tides / cyclone in coastal areas of Sindh- Karachi, Thatta and Badin and also from drought about 2.0 million. In all about 5.5 million is considered to be affected i.e. around 10% of province's population.

Rescue and Relief Planned:

Based on the experiences and relief interventions also standard practice, almost 30% of population considered under risk. Accordingly, Provincial Disaster Management authority (PDMA) 2 million population with 0.33 million household. PDMA will need approximately Rs. 3.0 billion for procurement of relief goods and transportation. Details are at "**Annexure-D**"

Anticipated duration of emergency

Scenario 1: between one to three months

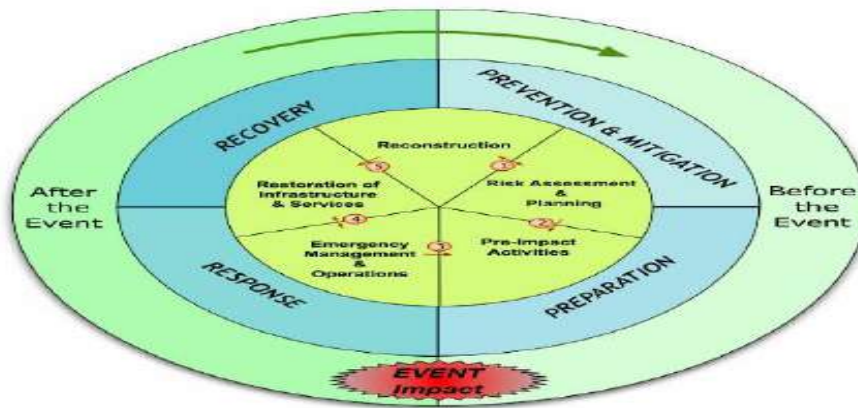
Scenario 2: between one to two months

Scenario 3: for about one month

CHAPTER FIVE

Preparedness Planning

Based on the last three year monsoon disasters situation- 2010, 2011 and 2012 and looking to global climate change which increased temperatures, erratic rains including higher intensity that effect crops, human and animal life and experiences gained in mitigation of emergency affects, PDMA has coordinated with all the concerned Provincial Government Departments, District Administrations, Federal Government Organisations and UN Agencies, INGO/ NGOS prepared multi-hazard contingency plan, so as, to minimise the human sufferings. The PDMA follows the **Disaster Management Cycle** which is reflected as under:



The preparedness is given as under:

Flood Preparedness 2013					
Provincial Government Department					
Provincial Disaster Management Authority Sindh					
S.No	Pre Disaster	During Disaster	Post Disaster	Challenges	Remarks
	Secretary Rehabilitation in consultation with chief secretary Sindh will be responsible for response & Relief Operation through Director General PDMA on his behalf. The Director General will head a Composite Team (comprising representatives of Lead Agencies/ Departments and focal persons of support organizations) to coordinate response, relief operations and Early Recovery.	The coordination and collection of information and resources to support disaster/emergency incident management activities.	The Rehabilitation Department PDMA in collaboration with partners has to closely monitor the situation. PDMA pre-position the flood and identify storage in the nearby and secure vicinity. Logistic arrangement should be done in advance keeping in view the positions available in the case of crises. An initial rapid assessment will be carried out to identify the areas and targeted beneficiaries.	Focus is to restore social services delivery, livelihood and bringing normality after meeting the basic shelter, health and food security need. This is where general inadequacy in both resources and planning has been identified in most of the districts.	
	Provincial Emergency Operation Centre (PECO) would be made operational by mid May 2013, so as, to make all	The PEOC will be a central coordination, command and control facility responsible for carrying out emergency preparedness	The PDMA will arrange the transportation of food to the Flood Displaced Persons (FDP) to further distribution.	Sector that need to be supported substantially by both provincial resources mobilizations and	

	<p>arrangements for receiving forecast data from PMD and its dissemination.</p> <p>The PEOC will be functional till the recession of floods.</p> <p>The PEOC shall receive and transmit flood/ water level information thrice in flood season and on hourly basis during emergency.</p>	<p>and emergency management functions at a strategic level in an emergency situation, and ensuring the continuity of response operations.</p>	<p>Local NGOs will be hired to distribute the food. An inventory of NGOs working in these areas will be prepared prior to the crisis, in order to mobilize them quickly in case of emergency.</p>	<p>through humanitarian/ federal support are housing, health, livelihoods regeneration, agriculture and livestock, restoration of road access and above restoration public services i.e. water supply, communication and education.</p>	
	<ul style="list-style-type: none"> • Identification of available resources i.e. machinery, tents etc., and Gaps. • Contingency planning as to identify role of each stakeholder during emergency. 	<p>Boats, OBMs (Out Board Motor), tents, dry rations food items are being procured to be placed at the disposal of DDMA's. PDMA shall undertake need based coordination with all UN agencies and other humanitarian partners to fill in the response and relief gaps before, during and after floods. PDMA has coordination with all UN agencies and humanitarian partners to maintain a stock (food and NFI including shelter).</p>	<p>Continue with relief and early recovery operation till affected people are settled back to their original abode and economic activity is resumed</p>	<p>Give the frequent incidences of flood in Sindh during monsoon seasons the government has taken adequate measures for flood control and management down to district level. The resources and technical inadequacy in response will be made up by the Pakistan Army which is expected to play a significant role by providing search and rescue services and emergency relief in affected areas.</p>	
	<ul style="list-style-type: none"> • Ensuring coordination between line departments & other stakeholders for any emergency, through workshops, trainings etc. • Assisting DDMA's in provisions of adequate required resources for monsoon season. 				

Health Department

S.No	Pre Disaster	During Disaster	Post Disaster	Challenges	Remarks
	<p>Provide specific information required regarding precautions for epidemics</p>	<p>Providing emergency treatment to the affected</p>	<p>Establishment of medical camps, vaccination, ensuring safe food & water in relief camps</p>	<p>The potential of last three years of flood / rains has deteriorate the health condition of population summons special attention. Severe flood can not only cause destruction to health care infrastructure (already scare health facilities in Sindh which were adversely affected in 2011 rains, 2010 flood and rain 2012) but it will also affect health indicators of the affected population. The nutritional care will also be serious</p>	

				challenge including expected mothers and children.	
15	Establish a health mobile team in district , town headquarter hospital and at camp sites	Provision of First-aid & water testing kits, chloramines and anti-snake venom serum & other emergency support	Conduct impact assessment on health, intervene to stop outbreak of diseases	The vulnerability to endemic diseases stands enhance after the flood due to lack of safe water and sanitation facilities, poor hygiene, conditions conducive for vector borne diseases. These conditions amplify the risk for spread of acute watery diarrhoea (AWD), typhoid fever, malaria, measles, relapsing fever and acute respiratory illnesses.	
	Setup an information centre organize sharing information	Deployment of mobile medical teams & health staff	Rehabilitation of health infrastructure	Setting up communication system for timely information	
	Collaboration with relevant organizations/partner NGOs	Collaboration with all relevant stake holders	Implementation of emergency health protocol	Training and adequate and timely medical supplies	

Education Department

S.No	Pre Disaster	During Disaster	Post Disaster	Challenges	Remarks
	Providing the necessary information & training to teachers & students regarding disasters and tips to save their families & themselves during disaster.	Mobilize the human resources for intervention during disaster	Assessment of damages & needs of affected educational institutes	The rains of 2012 & 2011 and flood of 2010 had caused severe damage to educational buildings (schools/colleges), which could have been used for relief camps. Moreover, the educational buildings used as relief camps last years also need repair & maintenance and are not fit to be used again as relief camps. Hence, this would pose a serious threat in accommodating the affected people	
	In Collaboration with Civil Defence systemize volunteers	Arrangement for evacuees to setup relief & temporary shelter camps	Rehabilitation of affected educational institutes		
	Impart awareness among students and parents about Health Precautions	Deployment of volunteers for camp management & emergency support	Continuing Education of children at camps and helping them to recover from shock by providing toys etc.		

Agriculture Department

S.No	Pre Disaster	During Disaster	Post Disaster	Challenges	Remarks
	Assessment of high prone areas and estimation of possible damage	Immediate mass awareness and update of situation	Assessment of damages & needs of affected crop area and submit to DDNA	Timely provision of seed and other inputs for season's sowing	

				Collection of authentic / accurate data on agriculture damages.	
	Create community Seed Bank at UC level	Arrangements for relief & temporary shelter camps in canal rest houses	Assistance in repair & rehabilitation of irrigation systems	Arrange fund for restoration of damages and early recovery of agriculture activities	
	Regular surveillance of irrigation water supplies	Crop production	Timely compensation to affected farmers		
	Close coordination with Meteorology Department & other stakeholders for weather information	Watch for protection of Agriculture crops	Mass awareness repairing epidemics & diseases to crops		

Livestock and Fisheries Department

S.No	Pre Disaster	During Disaster	Post Disaster	Challenges	Remarks
	Estimation of possible damage	Update local communities of ongoing situation	Assessment & submission of damages & need of affected livestock to DDMA		
	Mass Awareness regarding precautions	Provide livestock vaccination	Timely compensation to affected livestock owners		
	Close coordination with Agriculture, Irrigation, Meteorology Department & other stakeholders	Arrangements for relief & transportation of livestock along with provision of fodder in coordination with PDMA	Mass awareness regarding epidemics & diseases to livestock	Placement of animals near relief camps, where animal keepers to be sheltered	

Planning and development Department

S.No	Pre Disaster	During Disaster	Post Disaster	Challenges	Remarks
	Prepare for gathering statistical data regarding possible damages & recovery needs from all relevant departments	Arrange collection of data on damages and dissemination among the stakeholders.	Gathering of statistical data regarding actual damaged & recovery needs from all relevant departments	Support in coordination and collection of damage authentic data	
	Plan & identify potential resources		Plan & Identify potential resources		
	Facilitation other department in planning	Coordination with Provincial Government Departments, especially Rehabilitation Department / PDMA for arrangement of Funds for Early recovery and Rehabilitation.	Facilitation other departments in planning and execution of rehabilitation in cost effective manner		
			Coordinate with all line departments		

Revenue Department

S.No	Pre Disaster	During Disaster	Post Disaster	Challenges	Remarks
	Assessment of high prone areas and estimation of possible damage and needs for recovery	Establish relief distribution centres and accept relief donation/ relief support	Assessment of damages of industrial/business, crops and livestock and settlement of applicable taxes accordingly	Collection and compilation of authentic data of damage assessment	
	Arrangement of financial resources and facilitation in getting tax	Request assistance from DDMA's and coordinating in timely release of funds and	Support PDMA in conduct of authentic damage assessment and		

	exemptions to institutions NGOs/INGOs focusing on disaster management	submitting financial reports	compensation need		
Police Department					
S.No	Pre Disaster	During Disaster	Post Disaster	Challenges	Remarks
	Information dissemination through "15 helpline Service" to local residents	Rescuing affected, shifting, to hospitals and corpse disposal	Ensure security to workers of NGOs/INGOs	Communication systems ,logistic support and availability of funds	
	Prepare Plan, Teams & their training for emergency intervention	Providing easy access & security to rescue & relief teams.	Development of Contingency Plan		
		Maintain law & order and divert traffic on alternative safe routes as and when necessary	Provide security in Un-safe areas		
			Facilitation to institutions/NGOs/INGOs which focus on rehabilitation activities		
Civil Defence Department					
S.No	Pre Disaster	During Disaster	Post Disaster	Challenges	Remarks
	Information sharing regarding technical and personal expertise with PDMA	Rescue & evacuation and deployment of volunteers	Identify gaps, make future plan to overcome weaknesses		
	Conduct training for volunteers regarding first aid & other activities	Communicate to DDMA any additional resources required for performing rescue & evacuation activities	Assisting district administration& other line departments in rehabilitation works		
	Effectively train & systemize volunteers and mass awareness regarding necessary first aid-rescue activities	Taking precautionary measures to stop fire-incidents in camps & perform fire fighting in emergency			
Finance Department					
S.No	Pre Disaster	During Disaster	Post Disaster	Challenges	Remark
	Review past experiences and arrange for fund availability to be placed at the disposal of PDMA and concerned agencies	Review the need of provision of fund and make timely releases	Review the situation and arrange fund for early recovery, rehabilitation and reconstruction	Availability of Fund.	
Local Government Department					
S. No	Pre Disaster	During Disaster	Post Disaster	Challenges	Remark
	Prepare vulnerability and risk analysis of rural population at Union Council level	Mobilise man power to protect life and property of affected population and support to PDMA	Support PDMA and other agencies involved in relief measures		

	Prepare contingency plan for protection of rural population	and other agencies involved in search, rescue and rehabilitation efforts			
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Irrigation Department

S.No	Measures	Challenges	Remarks
	Establishment of flood control Centres	Formulation of Legislation to :-Check development / construction of illegal Zamindari Bunds, permanent settlements and encroachment in river / flood plains. Removal of all illegal bunds affecting safety of existing flood protection bunds and other structures	
	Liaison with armed forces and civil administration	People living in Kacha areas be relocated. Least is that they may be allowed to Utilize Kacha area only for cultivation.	
	Strengthening of bunds and normal maintenance etc	Provision of escape channels through embankment linking both guide bunds at Khairpur, Larkana and Dadu-Moro Bridge.	
	Soaking arrangement along bunds is made by pumping water from river into wetting channels	Designs of both embankments be re-evaluated to:- Enhance lateral strength Enable these to withstand flood water	
	Stock piling of Abkalani Materials along bunds	Feasibility study by I&P Department for Sukkur Barrage for:- Restoration of Sukkur Barrage to its original capacity (1.5 million cusecs) by structural modifications. De-silting of the Barrage upstream storage area	
	Stock piling of stone bounders at erosion sites.	Capacity building of I&P Department in terms of provision of equipments to fight the floods, specially the breaches. Sheet Piling may be evaluated and its feasibility be ascertained.	
	Construction of Katcha Landhies along bunds for patrolling staff	Manchar Lake bund should be raised at 121 feet RL+ 6 Feet and entire bunds should be stone pitched	
	Engagement of patrolling staff	Complete or partial re-modelling of Aral Tail and Aral Head to increase capacity.	
	Round the clock patrolling by staff to check occurrence of leak etc.	Alternative, a study should be carried out to ascertain escape spillway direct to Indus from Manchar.	
	Deployment of heavy machinery viz. dozers, excavators etc at vulnerable sites	Provision of heavy machinery (cranes/dozers) at division/ district level.	
	Making wireless communication arrangements (Departmental)	Rehabilitation of surface drainage network for Evacuation of rain, storm and cyclone water in minimum time to protect public infrastructure and private asset	
	Lighting arrangements at vulnerable sites		
	Arrangement of transportation for department's officers and supervisory staff.		
	Strengthening of drainage network for evacuation of flood, rain, storm and cyclone water		



DISTRICT LEVEL FLOOD PREPAREDNESS:

Districts across Sindh reflect diverse capacity to respond. However, basing on the experience of 2010, 2011 and 2012 floods/ rains/ drought of all the districts across Sindh have already put in place a comprehensive mechanism for prevention, mitigation and response of floods. The DDMA and its officers assisted by support staff will spearhead response; the salient features are as are as below:

- District level contingency plans have been made and notified.
- Committees for various activities at District and Taluka level have been constituted to address the issues minutely for an effective disaster preparedness and response mechanism.
- District level control rooms will be operational (24 hours) from **1st July 2011**. The control rooms will be district focal points for flood response and will essentially perform coordination and information management functions.
- To receive real time information on water levels, a network of community level organizations and community volunteers have been organized in the catchment areas, especially for mountainous districts.

- For quick dissemination of flood warning by PDMA, Revenue and Irrigation departments have joint efforts. Moreover, mosques schools and other community networks will also be utilized.
- Irrigation departments have been tasked to establish Observation Posts on the likely areas and forewarn the emerging threat.
- District level food stock (wheat) quantities and locations have been asked to be identified and notified
- The NFIs stocks available with district government and NGOs/ INGOs are in the process of their preparation.
- Civil defence staff and volunteers where they exist have been made fully functional.
- All sensitive flood disaster prone areas and threatening water channels have been identified and notified.
- Deputy Commissioners have taken on board all the humanitarian agencies i.e. INGOs, NGOs and UN agencies present in the district on the advice of PDMA.
- The evacuation centers are earmarked with the assistance of education department and have been notified
- For sensitive government buildings and record each department has made its own SOPs.
- District level coordination meetings have been held resulting in clear roles and responsibilities of all relevant departments in case of any emergency
- Necessary liaison has been done with Pak Army, Pakistan Navy and Pakistan Air Force for initiation of rescue operations if required.
- The local police authorities have been directed to assist in evacuation and keep law and order situation in case of any situation.
- The training of human resource is planned to be initiated in June, especially for operating rescue boats with the assistance of Pak Army.

FLOOD MANAGEMENT PLAN FOR DISTRICTS.

➤ Preparation of Flood Management Plan which include:

- **Pre Flood Phase.**
- **During Flood Phase**
- **Post Flood Phase**

PRE FLOOD PHASE

- Nomination of Representative / Focal Person for coordination
- To prepare a disaster management plan including district response plan for the district.

- To coordinate and monitor the implementation of the district plan in line with national policy, Provincial Policy, National Plan and Provincial Plan.
- To give directions to different authorities at the district level as well as local level authorities to take such other measures for the prevention or mitigation as may be necessary.
- To monitor the implementation of disaster management plans prepared by the departments of the government at the district level.
- To organize and coordinate specialize training programs for different levels of officers, employees and voluntary rescue workers in the district.
- To facilitate community training awareness programs for prevention of disaster or mitigation with the support of local authorities, governmental and non-governmental organizations.
- To identify buildings and places which could, in the event of disaster situation be used as relief centers and camps and make arrangements for water supply and sanitation in such buildings or places,
- To establish stockpiles of relief and rescue materials or ensure preparedness to make such materials available at a short notice.
- To encourage the involvement of non-governmental organizations and voluntary social – welfare institutions working at the grassroots level in the district for disaster management.
- To ensure communication and disaster management systems are in order.
- Establishment of District Emergency Flood Control Room
- Flood Early Warning System
- Capacity Building of Department regarding disasters
- Information sharing regarding capacities and needs of department
- Plan and identify potential resources
- Identification of Exit Point
- Identification of Vulnerably Points
- Identification of Sites
- Monitoring of Bunds
- Raising and Strengthening of Bunds

DURING FLOOD PHASE

- Evacuation / Mobilization of human resources for intervention
- Transportation
- Arrangements at Exit Point
- Arrangements at Permanent Camp Sites
- Requirements during Flood / Rain 2012

POST FLOOD PHASE

- De-watering of low lying areas
- Repatriation of IDPs
- Assessment of Damages
- Focus on Rehabilitation Activities.
- Preparation of impact assessment surveys covering strengths and weaknesses of interventions and impact on affected victims and dissemination learning to DDMA and other concerned institutions.

District Wise Proposed Number of Relief Camps

S.No	District Name	No. of Proposed Relief Camps(Detail and in District Contingency Plan)	Remarks
1	Jacobabad	7	8200 tents will be install during emergency
2	Dadu	149	
3	Shikarpur	12	7950 tents will be install during emergency
4	Mirpurkhas	-	Relief Camps are not attached in District Contingency Plan
5	Sanghar	300	Schools which can be used for IDPs shelter
6	Umerkot	-	Relief Camps are not attached in District Contingency Plan
7	Tando Muhammad Khan	30	Schools which can be used for IDPs shelter
8	Tando Allahyar	51	Schools which can be used for IDPs shelter
9	Tharparkar	94	Relief Camps can be established during emergency
10	Khairpur	19	Schools which can be used for IDPs shelter
11	Badin	-	All Govt. Buildings of Badin proposed for IDPs shelter during emergency
12	Mitiari	23	Schools which can be used for IDPs shelter

13	Karachi (Baldia Town)	12	Schools which can be used for IDPs shelter
14	Karachi (South)	-	Relief Camps are not attached in District Contingency Plan
15	Hyderabad	36	Schools which can be used for IDPs shelter
16	Kambar-Shahdadkot	144	7 Relief Camps will be installed incase flood water from Baluchistan
17	Larkana	12	Schools which can be used for IDPs shelter
18	Jamshoro	44	Schools which can be used for IDPs shelter
19	Sukkur	15	Schools which can be used for IDPs shelter
20	Thatta	72	Schools & Educational Centre which can be used for IDPs shelter
21	Naushahro Feroze	-	Relief Camps will be established in 16 cities of District Naushahro Feroze
22	Kashmore	42	Establish relief camps in different Areas
23	Shaheed-Benazirabad	71	Mostly Establish in Govt. Schools
24	Ghotki		Contingency Plan 2013 still not received from district
TOTAL Proposed Number of Relief camps		1133	

SOP OF TALUKA MUNICIPAL ADMINISTRATION

- The officials of the Taluka Municipal Administration shall establish round the clock Control Rooms during the emergency.
- The officials of the Taluka Municipal Administration shall ensure de-watering pumping machines are in proper order for emergency.
- The officials of the Taluka Municipal Administration shall identify the dangerous buildings and take necessary action as per Municipal Building laws.

- The officials of the Taluka Municipal Administration shall ensure the Fire Brigade and concerned staff available round the clock.
- The officials of the Taluka Municipal Administration shall declare it essential for the staff to be present during the emergency in order to ensure availability of staff
- The officials of the Taluka Municipal Administration shall assist the concerned Revenue Officers for arranging manpower and establishing Relief Camps in case of any emergency.

The officials of Taluka Municipal Administration shall arrange the required labour force and assistance from locals in case of emergency

Armed Forces					
S.No	Pre Disaster	During Disaster	Post Disaster	Challenges	Remarks
	Prepare necessary equipments, labour, transportation means and other material for emergency intervention	Providing rescue services, medical support, logistic backup and transportation of relief material	Assisting district administration & other line departments in rehabilitation of affected Areas.		Army will only assist civil administration in rescue and relief phase on formal request.
	Evacuation of public of safe areas before the disaster	Establishment of relief camps			
	Assisting Rehabilitation / PDMA and line departments in protecting roads, bunds etc from getting flooded	Remove hindrances from roads & installation of temporary bridges & bunds.			
		Collate information and warm appropriate Army units			

The assets available with Armed Forces and committed for development as under:

Resources	Quantity
Army Helicopters	14
PAF and Navy Helicopters	4 to 6
Boats (including 68 Civil Boats)	563
OBM's (including PN and Civil)	484

The resources of Government of Sindh held with Pakistan Army are given as under:

S. No.	Item	SA	PWS	RA	US	Total	Def	Sur
1	Boats (Yamaha)	15	10	62	8	95		
2	OBM 15,25,30,40 & 55HP	33	17	118	18	186		
3	Life Jackets (All Types)	210	601	540	190	1541		
4	Search Light	40	-	-	-	40		
5	Paddle	-	122	10	125	257		
6	Boat Aslt M-2	-	14	12	4	30		
7	De-watering pump set (All	40	-	10	-	50		

	Types)							
8	Anchors	77	37	-	3	117		

Pakistan Meteorological Department

S.No	Pre Disaster	During Disaster	Post Disaster	Challenges	Remarks
	Update & upgrade Forecast equipments	Ensure strict vigilance and round the clock Racci / Monitoring of flood bunds at vulnerable locations particularly during peak flow hours besides flood flows especially generating hill torrents/ nallah during flood seasons	Identify gaps, make future plan to overcome weaknesses of department	<ul style="list-style-type: none"> Regular availability of electricity Availability of State of the art equipments - digital / electronic radars etc. 	
	Pre-flood monitoring of all flood protection infrastructures	Effective arrangement for liaisons with Flood Forecasting Division (FFD) in Lahore/Pakistan Meteorological Department and WAPDA for issuance of flood warnings well in time up to the levels of districts Administration	assisting district administration & other line departments in rehabilitation works		
	Preparation of Disaster/Area-wise comprehensive flood fighting plan by the provinces/Federal Line Agencies	Association of local Abadis /beneficiaries for co-ordinated flood management & protective measures as social mobilization.	After peak flood flows/flood season, reconnaissance of all the flood protection infrastructure works be carried out. Status Report may be prepared and submitted to all concerned including FFC within two months. Remedial measures should also be started immediately wherever required.		

United Nation Agencies

S.No	Pre Disaster	During Disaster	Post Disaster	Challenges	Remarks
	The UN Agencies are in process of preparation of their Contingency Plans, as soon as, shared with same to be integrated with provincial Multi Hazard Contingency Plan				

International NGO's

S.No	Pre Disaster	During Disaster	Post Disaster	Challenges	Remarks
	The INGOs / NGOs are in process of preparation of their contingency plan and stock piling on needed goods & article / equipments.				

National and Local NGO's

S.No	Pre Disaster	During Disaster	Post Disaster	Challenges	Remarks
	Facilitate DDMA member departments for capacity building regarding disaster risk management.	Collaborate and facilitate in relief operations.	Collaborate and facilitate in rehabilitation activities.		

	Capacity building of community groups regarding disaster risk management.	Incorporate local and national expertise in disaster response.	Incorporate local, national and international expertise in rehabilitation activities.		
	Linkages with concerned departments and institutions for providing technical and financial resources regarding diverse sectors related to disaster.	Establish temporary shelters & camps.	Facilitate overall rehabilitation in collaboration with concerned departments.		
	Resource mobilization at local, national, international level.	Facilitate in overall disaster response in collaboration with concerned departments (e.g. medical aid with Health department and so on)	Impact assessment studies and sharing findings with DDMA, local, national and International partners.		
		Regular updates and alerts to local, national & international partners.	Preparation of overall reports and share with DDMA and other partners.		
		Utilization of existing resources and further mobilization at local, national and international Level.	Linkages with partners for sustainable resources mobilization.		
		Assessment of losses using sphere standards.			

CHAPTER FIVE

Coordination and Partnership

Contingency Planning Strategy:

The contingency planning strategy is to save lives of people from shelterness, starvation and malnutrition; also prevent internal migration at large scale.

The emergency situation is likely to prevail from one to three months.

Appropriateness of possible longer-term and follow up

The high flood in River Basin and coupled with heavy downpour in province, besides monsoon high tides in coastal area up root population due to poor housing and inadequate drainage systems including communication (road and rail network) suffer at large. Hence, humanitarian assistance would be required for longer period up to three months till environment are conducive for return of affected population to their original abode.

Partnership and Coordination:

d. Implementing partners:

Provincial / District Governments, NGOs/ INGOs / Civil Societies.

e. Monitoring and reporting arrangements

The PDMA through District Governments , Field offices and in liaison with local NGOs, CSO, Local institutions is to report on daily basis on standard format about the emergency situation by releasing situation update reports.

f. External coordination arrangements

International Donor / UN Agencies and charity organizations are to be coordinated through NDMA and Federal Government Organisations.

5.3 Food Resources Availability:

a. Market Availability

Food items are available in market to meet the emergency requirements, wheat is available in Government Food Department.

b. Likely actions

- List of potential suppliers / vendors
- Agreement with suppliers / vendors
- approval of competent authority

c. **Other likely food aid agency responses and humanitarian sources of Food Aid.**

The countries like USA, Canada, Japan, Germany, Sweden, Netherlands, United Kingdom, Italy, Switzerland, Australia and European Union and UN Agencies are generally support agencies.

5.4 Logistics:

a. **Transport-routes, mode.**

- i. Relief goods would be transported by supplier to the storage facilities
- ii. Bridges may collapse need to be identified with alternative routes (belly bridges from the army, helicopters – need to be checked)
- iii To assess local transport capacity, update list and prepare contracts
- iv Internally displaced people (IDPs) will be identified by the implementing partners

b. **Storage:**

- Main storage facilities are assessed of government and NGO storage capacities.
- PDMA with the assistance of UNWFP constructed 10 ware houses to store essential items

c. **Telecommunications: office, vehicle, convey be organised:**

- Vehicles with communication equipment VHF, HF, sat-phone, GPS
- Radios for monitors
- Check software availability and the budgeting (ICT officer to assess)
- Mobile phones?
- Power should be available in government district offices – there are generators – internet connection?

d. **Special operation**

The experiences indicate that no special operation will be needed. The Government and NGOs resources will be sufficient to meet the requirements.

e. **Media /Public information strategies**

Media coverage be provided through press, TV, hand out / press – releases. The Provincial / District Emergency Centres will handle it.

LOCAL / INTERNATIONAL NGOs and Community Based Organizations

Both the Local as well as International NGOs has been taken on board those have arranged sufficient stocks of relief items which include food items, tents, medicines, non-food items, blankets etc. for immediate utilization in the affected areas.

CONTACT NUMBERS OF STAKEHOLDERS OF PROVINCIAL GOVERNMENT DEPARTMENTS

S.#	Designation	Office	Fax
1	Chief Secretary	99212949 99212950	O:99202095 R:99202095
2	Senior Member Board of Revenue	99202630 99203407	99202630
3	Addl. Chief Secretary (Dev), P&D Department	99211405 99211921	99211922
4	Chairman Enquiries & Anticorruption Establishment.	99211891 99211251	99211251
5	Chairman Chief Minister's Inspection Team	99211929 99211923	99211923
6	Principal Secretary to Governors' Secretariat.	99201201 99201212	99201226
7	Secretary, Chief .Ministers' Secretariat	99202051-54	99202000
8	Secretary, Information Technology Department	99211421	99211414
9	Secretary, Health Department	99211565 99211012	99212937
10	Secretary, Land Utilization Department	99202629 99206356	
11	Secretary, Provincial Ombudsman	99211023	99211091
12	Secretary, Local Government Department	99211536	99211537
13	Secretary, Implementation, SGA&CD	99211326	99211327
14	Secretary, Finance Department	99203114 99206516	99206511 99206504
15	Secretary, (GA&C) SGA & CD	99211899-99211963	99211955
16	Secretary, (Services) SGA & CD	99211940 99211893	99211368
17	Secretary, Culture Department	99211003 99211098	99212837
18	Secretary, Livestock & Fisheries Department	99203291-2	99203292
19	Secretary, Planning & Development Department	99211415 0300-8249742	99211423
20	Secretary, Auqaf Zakat & Ushr Department	99211970 99211007	99211006
18	Secretary, Education & Literacy Department	99211225 99211238	99211238
19	Secretary, Food Department	99211184 99211515	99211986
20	Secretary, Coal & Energy Development Department	99211294 99211295	99211296
21	Secretary, Mines & Mineral Development	99211389	99211296
22	Secretary, Excise & Taxation Department	99211434 99211432	99211435
23	Secretary, Welfare Department	34313922	4522644

		34522488	
24	Secretary, Home Department	99211259 99211355	99211549
25	Secretary, Information & Archives Department	99204415 99204416	99204416
26	Secretary, Labour Department	99211551 99211938	99211520
27	Secretary, Law, Prosecution, PA & H.R. Department	99212038 99212023	99212023
28	Secretary, Irrigation & Power Department	99211445 99211451	99211447
29	Secretary, Agriculture Department	99211468 99211462	99211469
30	Secretary, Forest & Wild Life Department	99203105	99203112
31	Secretary, Public Health Engineering Department	99213080	99211540
32	Secretary, Women Development Department	99211507 99211890	9213455
33	Secretary, Environment & Alternative Energy Department	35115296	5065940
34	Secretary, Cooperation Department	99203149	99203181
35	Secretary, Inter Provincial Coordination Department	99213824 99213822	99213823
36	Secretary, Transport Department	99211017	
37	Secretary, Industries & Commerce Department	99211290	
38	Secretary, Katchi Abadies & Spatial Development	99211275 99211281	
39	Secretary, Sport & Youth Affairs Department	99213370 99213371	
40	Secretary, Antiquities Department	99213880 99213879	99213878
41	Secretary, Social Welfare Department	99211202	99211559
42	Secretary, Rural Development Department	99202659	
43	Secretary, Tourism Department	99211003 99211098	
44	Secretary, Provincial Assembly Secretariat	99212000	99212033
45	Secretary, Bureau of Supply & Prices	99217794-5	99243353
46	Secretary, Minority Affairs Department	99206184	
47	Member RS&EP, Board of Revenue	99206365	
48	Member (R&S). Board of Revenue	99206363	99206363
49	Member Goth Abad, Board of Revenue	99251385-6	
50	Member Judicial I, Board of Revenue	022-99200549	
51	Member Judicial II, Board of Revenue	022-9200550	
52	Member Judicial III, Board of Revenue	3332657835	
53	Secretary, Rehabilitation Department.	99211421	

**CONTACT NUMBERS OF STAKE HOLDERS OF
COMMISSIONERS/ DEPUTY COMMISSIONERS**

S. #	Division / District	Office	Residence	Fax
1	Commissioner Karachi	021-99205607	021-99205614	99205652
2	Commissioner Hyderabad	022-9200112-3	022-9200115	9200114
3	Commissioner Larkana	074-9410243-4		9410293
4	Commissioner Mirpurkhas	0233-9290052-3	9290054-57	9290055
5	Commissioner Sukkur	071-9310834-5	9310617-8	9310619
6	Deputy Commissioner Hyderabad	022-9200976 022-9200244	022-9200570 022-9200571	9200245 2721180
7	Deputy Commissioner Thatta	0298-770359	920056 920057	920058 920063
8	Deputy Commissioner Badin	0297-962362	862362	861471
9	Deputy Commissioner Dadu	025-9200250 025-9200251		9200252 9200255
10	Deputy Commissioner T.M Khan	022-3342160	3341009	3340292
11	Deputy Commissioner T. Allahyar	022-3892908	022-3890769	3892909 3892910
12	Deputy Commissioner Matiari	022-2760033	022-2760551	2760032 2760095
13	Deputy Commissioner Jamshoro	022-3871942	022-3870135	3871194
14	Deputy Commissioner Mirpurkhas	0233-9290052 0233-9290053	0233-9290052 0233-9290057	9290055 9290062
15	Deputy Commissioner Tharparkar	0232-261667 0232-261899	261925	261818
16	Deputy Commissioner Umerkot	0238-570700 0238-571987	571576	571474 571484
17	Deputy Commissioner Sukkur	071-9310835 071-9310837	071-9310617	9310619
18	Deputy Commissioner Ghotki	0723-652016	0723-651628	651424
19	Deputy Commissioner Khairpur	0243-9280200 0243-9280201	0243-9280200 0243-9280201	9280237 9280202
20	Deputy Commissioner Naushero Feroze	0242-448256 0242-448348	0242-448315	448881
21	Deputy Commissioner Shaheed Benazir Abad	0244-9370334 0244-9370337	0244-9370336	9370338
22	Deputy Commissioner Larkana	074-9410336	074-9410337	9410334 9410392
23	Deputy Commissioner Shikarpur	0726-920200	0726-920203	920202
24	Deputy Commissioner Jacobabad	0722-653999	0722-653499	653711

25	Deputy Commissioner Kashmore	0722-570901 0722-570903	0722-570904 0722-570938	570902
26	Deputy Commissioner Kamber	074-4210544 074-4168761	074-9410353	4211770
27	Deputy Commissioner Karachi East	021-99231214-5		99230994
28	Deputy Commissioner Karachi South	021-99205644	99206337	99202296
29	Deputy Commissioner Karachi Central	021-36966461-2		36989802
30	Deputy Commissioner Karachi West	021-32572222		32596601
31	Deputy Commissioner Karachi Malir	021-35001306		35001301

ANNEXURE B**List of Active NGOs / CBOs in the Province**

Name of NGO / CBO	Contact Person	Postal Address	Contact Number	District(s) of Operation
Sindh Agricultural and Forestry Workers Coordinating Organization (SAFWCO)	Suleman. G. Abro	H# C-415/416, Phase 1 Qasimabad Hyderabad.	92-22-2650996 0300-3359403 0300-8377353	
TRDP	Dr. Sono Khangharani	Near Dargah Hussain Shah MITHI	0232-261462	
Sindh Rural Support Organisation (SRSO)				
PVDP	Ramchand	Phase 1 Qasimabad Hyderabad	022-3001450	
TRD	Zaffar Junejo		022-2655021	
SPO	Mustafa	SPO Regional Office, behind Usman Diplai Centre Qasimabad Hyderabad	022-2656333 022-2654725	
TVO			022-2654157	
NRSP	Dr. Rashid Bajwa	46, Aga Khan Road, Sector F-6/4, ISLAMABAD	051-2822319, 2822324	
Kachho Foundation Dadu	Ghaffar Thaheem	Kachho Foundation Taluka Johi district Dadu	0306-8581532 0254-740357	
Marvi Rural Development Organization	Mrs. Sughra /Ashiq Solangi	C/o ABL, Kot Bungalow Distt: Khairpur Mirs	0245-620134	
ACTION Against HUNGER	Mr. Brian Kriz	F-7/1, Street No. 35/34, House No. 1-A ACF Islamabad	Tel: 92 -51-2824988	
Pakistan Poverty Alleviation Fund (PPAF)	Mr. Kamal Hayat	H # 1, Street 20,F-7/2 Islamabad	051-2653304-5 UAN: 111-000-102	
Oxfam	Ms. Farhana Farooqui Stocker	Pakistan Field Office H # 201, street -10, E-7 Islamabad	051-2653341-2	
Catholic Relief Service (CRS)	Ms. Alex Causton	H# 8 Street 60,Parbat Road F-7/4 Islamabad.	051-2873226	
Aahung	Town House No. G-28 / 9, Embassy Villa 10, Ch.Khaliq-u-Zaman	021-5870244	021- 5821654	

	Road, Block 8 Clifton			
Aasthan Latif Welfare Society	A / 273, Block 3, Gulshen-e-Iqbal, PO Box 17935, Karachi	029-770423, 0300 - 8240229	021-5693120	
Abdul Sattar Edhi Foundation	Edhi Head Office, Rangilla Street, Karachi	021-2421920	021- 2418753	
Aga Khan Education Service, Pakistan	House No 384, F-17/B, Block VII, KDA Scheme 5, Clifton	021-5863281-5	021- 5870736	
Aga Khan Health Service, Pakistan	516, Gold Street off Baritto Road	021-7214133, 7219435	021- 7221005	
Aga Khan Planning and Building Service, Pakistan	House No 300/2, Gerden East, off Baritto Road	021-7213797-7225574	021- 7225572	
All Pakistan Womens Association	APWA National Headquarter, 67/B, Garden Road	021-7212991	021- 7221965	
Al-Zohra Welfare Association	Quarter # 114, St. 6 Punjab Delhi Colony Nishter Road	N/A	N/A	
Association for Children with Emotional and Learning Problems - Institute of Child Development	197/8 Rafique Shaheed Road	021-5662458	-	
Association for Health, Education & Agriculture Development	Bungalow No. 105/082, Block No. 2	0235 - 541767	0235 - 541304	
Baanhn Beli	13 -A/ II, Sunset Street, DHA Phase II, Extension	021-5382580, 5892055	-	
Babaza Foundation Trust	32-C, Sayan Arcade, 1st Street Badar Commerical Area, Phase V, DHA, Karachi	5347194	5841690, 5345069	
Badin Rural Development Society	Opposite to Al-Huda Public School, Kdhan Road	0297 - 862046	0297 - 62046	
Bhandar Hari Sangat	First Floor, C-8, Phase II, Qasimabad	0221 - 652292	0221 - 652292	
Bright Educational Society	St. 1111/1115 Islamia colony U C 9 site room Dis	021-6658999 or 0300-9251836	021- 6658999	
Church World Service Pakistan/Afghanistan	House No 74 , Garden Road , P.O. 7743 Saddar	021-7215604	021- 7226055	

Citizen Education Development Foundation	88 Kh. Behria Phase V, D.H.A	021-5845023	N/A	
Citizens-Police Liaison Committee	CPLC - Central Reporting Call, Gate No.4, Sindh Governor's Secretariat, Abdullah Haroon Road	021-5682222	021-5683336	
Community Development Foundation	Husain Abad Sakrand District Nawabshah Sindh	0244 - 322826	N/A	
Community Development Network Organization	Shaikh Abdul Nabi Road, First Family Lane	0722 - 650841	0722 - 650991	
Concern for Children Trust	B 63, Estate Avenue, SITE	021-2574716	021- 2564797	
Dar-ul-Khidmat Welfare Association	House # B/175 - 3/8 Mehmoodabad, Karachi-1	0333-3223423	N/A	
Faran Educational Society	St - 4, Sector 14, Orangi Town	021-6690459, 4555729	021- 4555279	
Fatimid Foundation	393, Britto Road Garden East	021-7225284, 7213323	021- 7216752	
Fatimid Foundation	393, Britto Road, Garden East	2253323, 2225284, 2258656	227356	
Focus Humanitarian Assistance Pakistan	315, Off Britto Road, Garden East	021-7222191, 7220914, 7227975	021- 7227967	
Fundamental Human Rights and Rural Development Association	Ward # 4, Mashori House Taluka Golarchi District	0297 - 853395	0297 - 853553	
Goth Seengar Foundation	Khanjur office Ali Raza	0792-621115	0792-621115	
Goth Sudhar Sangat Aghamani	Buriro House Theba Road Mehar, P.O & Town Mehar, District Dadu, Sindh	0229 - 730530	0229 - 730530	
Goth Sudhar Sangat Bux	P.O Shah Panjo Sultan via Radhan Station	025 - 4750418	N/A	
Health And Nutrition Dev. Society (HANDS)	225/1/B Block-2, PECHS	021-4532804	021- 4527698	

ANNEXURE-C**PREPAREDNESS ACTIONS AND PLAN UPDATING BY PDMA / REHABILITATION DEPARTMENT**

S. No.	ITEM	TASK	RESPONSIBLE OFFICER	TIME	RESOURCES REQUIRED	PROGRESS
01	Multi Hazard Contingency Plan 2013	Prepare Multi Hazard Contingency Plan 2013	Operation Wing	May		
02	Provincial Emergency Operation Centre	Make Provincial Emergency Operation Centre fully functional	Operation Wing	May		
03	Storage Facility	Assess storage capacity needed	Operation Wing	June		
04	Construction of Ware houses	Complete construction of ware houses with the assistance of WFP	Operation Wing	May		
05	PDMA Staff roster	Prepare duty roster of PDMA Staff	Admn. Wing	June		
06	Manpower requirement for the Emergency Services	Prepare requirement for additional man-power needed for monsoon period and acquire from other departments	Operation and Admn Wings	June		
07	Staff ToRs	Prepare TOR for the staff for the monsoon period for PDMA other manpower to be engaged during emergency period	Operation and Admn Wing	June		
08	Emergency Fund	Arrange Emergency Fund well in time	Finance Wing	May		
09	Emergency stock	Arrange emergency stock for rescue and relief requirements	Operation and Finance Wing	June		
10	Vendor- update list	Update list of suppliers / vendors	Finance & Admn Wing	June		
11	Monitoring of Emergency situation	Organize collection of data on daily basis and release of information through POEC	Operation Wing	June		
12	Coordination with Provincial Government	PDMA to ensure state of preparedness of Irrigation Dept., especially at	Operation Wing and	June		

	Departments	<p>identified vulnerable points.</p> <p>PDMA to ensure due preparedness of KESC, KW&SB, HESCO and SESCO for availability of drinking water, dewatering of rain / flood water and maintaining drinking water supply and upkeep of sewerage system</p> <p>Electric Supply Organisation ensure maintaining the system to prevent electrocution cases</p> <p>Communication and Works Department to maintain the road network safe for communication and plan alternate route for communication during emergency</p>	Related organisations			
13	Logistic	Identify transport need with alternate routes, in case of disruption of normal means	Admn and Operation Wings	June		
14	Assessment	Conduct assessment during emergency and after about various damages	Operation Wing	June to Sept		
15	Early Recovery	Assess need for early recovery	Operation Wing	August to December		
16	Rehabilitation Plan	Prepare Rehabilitation Plan , in case, needed in association of all stakeholders	Operation Wing	Sept		
17	Follow up	Prepare completion report on rehabilitation plan	Operation Wing	Dec 2013 to Jan. 2014		
18	Disaster Risk Reduction (DRR)	Prepare Disaster Risk Reduction (DRR) Plan, based on the experience in consultation to all stakeholders.	Operation Wing	Oct. 2013		

Multi Hazard Contingency Plan Updating:

The Multi Hazard Contingency Plan is an effort to bring out that the natural calamity may affect province. Now, certainty of calamity could not be determined, but based on the experience of last three years,

it is expected that the global climatic change bring disastrous situation. Accordingly, necessary arrangements are being conceived for early warning and follow up actions.