

# **SINDH PROVINCIAL MONSOON/FLOODS CONTINGENCY PLAN 2012 (VERSION 1.0)**



**GOVERNMENT OF SINDH  
REHABILITATION DEPARTMENT  
PROVINCIAL DISASTER MANAGEMENT  
AUTHORITY**

## TABLE OF CONTENTS

Sr. No.	Topic	Page No.
	Executive Summary	01
1.0	Chapter 1 Overview of the Sindh Province	02
1.1	Geography	02
1.2	Geology	02
1.3	Demography	03
1.4	Society	03
1.5	Economy	04
1.6	Shelter	04
1.7	Administrative System	04
2.0	Chapter 2 Disaster Risks in the Province	05
2.1	Floods/ Rains	05
2.2	Cyclones	05
2.3	Tsunami	06
2.4	Drought	06
2.5	Earthquake	06
3.0	Chapter 3 Monsoon Contingency Plan – General Overview of Floods	08
3.1	Floods	08
3.2	The Supra Floods 2010	09
3.2.1	Key Losses in Sindh during 2010 floods	10
3.2.2	Rain Affected Districts	10
3.2.3	Flood Affected Districts	11
3.3	Affected Areas	12
3.4	Damages	12
3.5	Damages Need Assessment	13
3.6	Pakistan Cards	13
3.7	CDCP Phase – II	13
3.8	Relief	14
3.9	International Response	15
3.10	Civil Society and Private Sector Response	15
3.11	Early Recovery	16
3.12	Shortfalls in 2011 rains and 2010 flood response	16
3.13	Monsoon Risk and Risk accentuating factors	17
4.0	Chapter 4 Monsoon Hazards in Sindh	18
4.1	District Profile	19
4.2	Districts vulnerable to Monsoon / Flood hazards	20
4.3	Relief Camps	20-33
4.4	Map of River Indus passing through districts of Sindh province	34-35
4.5	Changes in the River morphology	36
4.6	Performance of Water regulatory infrastructure	36
4.6.1	Water flow comparison	36
4.7	Risks and vulnerability analysis	36
4.8	Aim	37
4.9	Objectives	37

4.10	Scope	37
4.11	Coordination arrangements	37
4.12	Scenarios	38
4.12.1	Hazards and resulting emergency	38
4.12.2	Scenario 3	38
4.12.3	Scenario 2	39
4.12.4	Scenario 1	39
4.13	Likely Triggers	39
4.14	Risk Analysis	39
4.15	Population at Risk	40
4.16	Anticipates duration of emergency	41
4.17	Triggers for response	41
4.17.1	Indus River System	41
4.17.2	LBOD	41
4.18	Provincial Hazards Risk and Vulnerability	42
4.19	Sindh Hazards Map Monsoon Map, 2011	50
5.0	Chapter 5 Monsoon Preparedness and Planning	51
5.1	Irrigation Department Pre-Monsoon Flood Mitigation Strategies	51
5.2	Provincial Disaster Management Authority – PDMA Flood Preparedness measures	52
5.3	Food Resources Availability	54
5.4	Logistics	55
5.5	Flood Management Plan	55
5.6	Budget	56
5.7	District level flood preparedness	56
5.8	Flood Management Plan for Districts	57
5.9	SOP of Taluka Municipal Administration	59
5.10	Provincial Health Department’s flood preparedness measures	59
5.11	Provincial Education Department’s flood preparedness measures	60
5.12	Provincial Agriculture Department’s flood preparedness measures	61
5.13	Provincial Irrigation Department’s flood preparedness measures	61
5.14	Provincial Livestock & Fisheries Department’s flood preparedness measures	63
5.15	Provincial Planning & Development Department’s flood preparedness measures	64
5.16	Provincial Revenue Department’s flood preparedness measures	64
5.17	Provincial Police Department’s flood preparedness measures	65
5.18	Provincial Civil Defence Department’s flood preparedness measures	65
5.19	Pakistan Meteorological Department’s flood preparedness measures	66
5.20	Armed Force’s flood preparedness measures	66

5.21	Local/ International NGOs	68
5.22	District Need and Gap Analysis	69
5.23	Telephone Directory	70

## **EXECUTIVE SUMMARY**

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

The lessons learnt from unprecedented 2010 floods and devastating rains of 2011 call for enhanced and more effective pre-emptive as well as response actions to control the situation and above all save lives. However, effective action depends on the existence of ready-made and well tested contingency plans. The provincial contingency plan has been formulated for translating recommendations from district governments and other stakeholders into action. However, the devastation caused by two consecutive disasters faced by Sindh has necessitated for taking on board all agencies for an integrated contingency planning, involving government departments, districts, humanitarian actors and Pak Army, in the light of lessons learnt from the 2 disasters. Resultantly, it is aimed at ensuring coordination and optimizing the use of resources among agencies in the field while complementing each other with appropriate linkages and better coordination to support actions along lines of command.

PDMA continues to emphasize upon the contingency planning process as a preparedness measure for response to natural hazards. Following the two catastrophes faced by the province, this plan focuses on planning for the upcoming 2012 monsoon hazards to identify and analyze related risks for not just their humanitarian impacts but also the associated adverse affects on private and public infrastructure, and to define roles and responsibilities of diverse stakeholders for preparedness and response.

PDMA this time carried out joint sessions for 2012 Monsoon contingency planning with district administration, provincial line departments, armed forces, primarily for anticipating likely scenarios and perceiving threat levels. While further drawing conclusions from the inputs through the technical experts and relevant departments. It mainly involves identifying gaps and challenges to effective emergency response and then planning and implementing a series of actions to increase response capacity and reduce potential gaps. Unlike former simple or generic scenarios were used as a basis for developing preparedness plans. The key anticipated outcomes are:

- ***depict anticipated threat perception for earmarking required resources,***
- ***build integrated planning capacities, and***
- ***define required gaps ensuing preparatory measures.***
- ***awareness for building capacities for response,***

# CHAPTER 1

## OVERVIEW OF THE SINDH PROVINCE

### **1.1 GEOGRAPHY**

The Province of Sindh is located in the South- Eastern part of the country (between Lat 23-35 and Lat 28- 30 N). Its gross geographical area is 140,914 Sq. km which is 18% of the country. The geographical area is 14 million hectares out of which almost 8.0 million hectare is cultivable, and the remaining area is not available for cultivation mostly lying in the northern hills of Khirthar Range, eastern desert of Thar Desert and Achharo Thar and the riverian area. Sindh's 60% land area is arid. Annual average precipitation is 5 inches yearly. The mighty River Indus flows in the middle of the province. There are seasonal streams which become active in the monsoon season, they emanate from the Khirthar hill range from west of province, which fallout in River Indus and Arabian Sea. The boundaries of Sindh are touched by Arabian Sea in South, India in east, Punjab in north and Balochistan in west. Administratively Sindh province is divided in 23 districts , 119 Talukas ( Tehsils ) , 1100 Union Councils, 1439 Tapas and 5,871 Dehs (Mauza) having 66,923 human settlements, as per 1998 census.

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 has industries of various kind which include textile, chemical , cement, steel and others. Most of the industries are located in three Cities- Karachi, Kotri/ Hyderabad and Sukkur. There are two modern sea ports: Karachi Port and Bin Qasim Port, both of which are situated in Karachi and serve the entire country including Afghanistan.

### **1.2 GEOLOGY**

The geology of Sindh is divisible in three main regions, the mountain ranges of Kirthar, Pab containing a chain of minor hills in the west and in east it is covered by the Thar Desert and part of Indian Platform where the main exposure is of Karonjhar mountains, which is famous for Nagar Parkar Granite. In the north Sindh is enquired by rocks of Laki range extending to Suleiman range and its southern most part is encircled by the Arabian Sea. The rocks exposed in this area belong to upper Cretaceous which are recent in age. The sub-surface rocks are about 20,000 feet thick and belong to Cretaceous and Pre-Cretaceous periods. 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 Paleocene, Laki, Tiyon, and Khirthar of Eocene age, Nari Formation of Oligocene, Gaj Formation of Lower to

Middle Miocene, Manchar of Upper Miocene to Pliocene, Dada Conglomerate of Pleistocene are present in various areas of Sindh. Limestone and sandstones are the most dominant sedimentary rocks in the area. Structurally Sindh generally contains gently folded anticlinal features trending in north-south direction. The major active faults in province are as under:

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

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

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

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

### 1.3 DEMOGRAPHY

The 1998 Census of Pakistan indicated a population of 30.4 million, the current population can be estimated to be in the range of 36 to 38 million using a compound growth in the range of 2% to 2.8% since then. With just under half being urban dwellers, mainly living in Karachi, Hyderabad, Sukkur and Larkana. It is 23% of national count. Male population is 16.098 million and female population is 14.342 million. The literacy ratio is 45.29%- male 54.50% and female 34.78%. Rural area 25.73% - male 37.89% and female 12.23% whereas, urban - 63.72% - Male 69.75% & female 56.66%. Agriculture & fisheries workers counts 34.84% out of which 65.56% is rural population, Elementary occupation and service sector and business count 43.65%.

### 1.4 SOCIETY

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

Sindh's population is predominantly Muslim. The province of Sindh is also home to nearly all of Pakistan's Hindus, numbering roughly 1.8 million, although most Sindhi Hindus migrated to India at the time of the partition. Smaller groups of Christians, Parsis or Zoroastrians, Ahmadis, and a few members of the Jewish community can also be found in the province.

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

## 1.5 ECONOMY

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

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

## 1.6 SHELTER

In 1998, there were 5.022 million households in Sindh, with average household size at 6.0 persons and occupancy at 3.3 persons per room. The overall housing stock comprised 52 percent kutcha houses mostly without proper water supply, 48 percent semi-pucca houses mostly without planned sanitation or sewerage system. The majority of rural housing is kutcha (mud), with minimal water supply and sanitation or drainage services. Almost half of the urban population is living in slums and kutchi abadis, with inadequate housing and living conditions. **The number of houses damages during floods 2010 and rains 2011 is estimated to 876,249 and 1,596,807 respectively.**

## 1.7 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 parallelly administered through Karachi Metropolitan Corporation (KMC) followed by its sub-categorization into District Municipal Corporations (DMCs). **There are 119 Talukas across Sindh.** The number of villages (settlements) was **66,923 as per census of 1998 within 5871 dehs.**



## CHAPTER 2

### DISASTER RISKS IN THE PROVINCE

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.

#### **2.1 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 can not 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, 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, 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 and 2010.

**Rains of 2003 monsoon in Sindh have affected around 411,000 acres of crop area, while 18,500 kilometres of road infrastructure suffered huge losses. Roughly losses are estimated around 45 billion rupees. This estimate includes crop damage, damage to health, education and road infrastructure, damage to houses and destruction of irrigation and drainage facilities.**

#### **2.2 CYCLONES**

The coastal districts have also been adversely affected by heavy rainfall and cyclones. The three coastal districts of 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). Keti Bunder town was wiped out four times in recent history. The cyclones of 2010 (PHET) and 2011(KIELA) also emerged during the last two years out which PHET caused damages in district Thatta significantly.

### **2.3 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 happened 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.

### **2.4 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 fag 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.

Arid area people 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 became poor. As a result of malnutrition, disease 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.

### **2.5 EARTHQUAKE**

The latest 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.

In addition to above, Sindh is vulnerable to following hazards:

- **Sea Intrusion**
- **Accidental Fires**
- **Epidemics**
- **Environmental Degradation**

## CHAPTER 3

### **MONSOON CONTINGENCY PLAN – GENERAL OVERVIEW OF FLOODS**

#### **3.1 FLOODS**

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

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

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

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

The size, or magnitude, of a flood is described by a term called recurrence interval. By studying a long period of flow records for a stream, it is possible to estimate the size of a flood that would, for example, have a 5-year recurrence interval (called a 5-year flood). A 5-year flood is one that would occur, on the average, once every 5 years. Although a 100-year flood is expected to happen only once in a century, there is a 1 percent chance that a flood of that size could happen during any year.

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

The confluence of river basins, the canal irrigation network and interrupted drainage system are some of the major reasons of flooding in Pakistan. .

Floods Can Be Divided In five major categories

1. **Monsoon Floods:** Flooding along rivers is a natural and inevitable. Some floods occur seasonally when monsoon rains, coupled with melting snows, fill river basins with too much water, too quickly. Torrential rains from decaying hurricanes or tropical systems can also produce river flooding.

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

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

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

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

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

5. **Coastal Flood** - Hurricanes and tropical storms can produce heavy rains, or drive ocean water onto land. Beaches and coastal houses can be swept away by the water. Coastal flooding can also be produced by sea waves called tsunamis, giant tidal waves that are created by volcanoes or earthquakes in the ocean.

### 3.2 The Monsoon Rains 2011 & Supra Floods 2010

The Province of Sindh experienced severe flooding after torrential monsoon rains hit its southern part in two spells in August 2011. The devastating rains triggered heavy flooding resulting in inundation of vast areas, causing wide spread damages to the lives & livelihoods of the affected as well as infrastructure. The excessive amount of rain even exceeded the drainage capacity of the infrastructure such as the LBOD, which facilitated the drainage of the water to some extent but was not designed to channel flood water. The rains of 2011 affected 8.9 million population, killing 414 people. Entire villages and urban centres were flooded, homes were destroyed and over a million acres of crops and agricultural lands were

damaged. The impact of the flooding cannot be seen in isolation. In 2010, 7.8 million people were affected by the largest floods in living memory, many people of whom were still in recovery phase.

### **3.2.1 KEY LOSSES IN SINDH DURING 2010 FLOODS AND 2011 RAINS**

<b>STATISTICS</b>	<b>2011</b>	<b>2010</b>
Number of Villages Affected	38,347	11,992
Number of Persons Affected	9,275,568	7,254,355
Number of Houses Damaged	1,596,807	876,240
Number of Persons Died	497	414
Maximum Number of Persons Reported in Government Relief Camps	768,457	1,821,479

### **3.2.2 RAIN AFFECTED DISTRICTS**

S.#	District	Total Persons Died	Village Affected	Persons Affected	House Damaged	No. Govt. Relief Camps	Persons in Govt. Relief Camps
1	T.M Khan	17	2,835	585,411	72,935	197	18,009
2	S. Benazirabad	41	4,104	900,000	200,000	660	48,672
3	T. Allahyar	3	1,609	569,829	70,163	236	58,413
4	Mirpurkhas	61	3,178	705,151	118,110	83	36,890
5	Thatta	23	901	178,011	15,693	13	5,227
6	Hyderabad	17	681	377,992	20,644	76	4,783
7	Badin	73	6,395	102,1301	382,562	99	23,,233
8	Matiari	25	415	109,629	32,803	315	67,644
9	Umerkot	31	3,769	821,179	122,103	113	118,213
10	Tharparkar	28	2,284	907,179	178,356	35	118,751
11	Shikarpur	-	-	-	-		
12	Khairpur	25	2,075	384,137	29,023		

13	Dadu	19	1,454	325,000	18,594	391	2,735
14	Jamshoro	16	614	97,350	43,950	459	6,236
15	Sanghar	39	5,182	1,237,432	213,928	636	131,914
16	Jacobabad		-	-	-		
17	Karachi	25	-	4	5	5	2,588
18	N.Feroze	26	437	671,067	31,455	172	14,419
19	Ghotki	11	1361	172,067	31,630		
20	Kamber Shahdadkot	6	543	145,030	7,439		
21	Kashmore	4	102	12,610	1,620		
22	Larkana	6	408	54,355	5,794		
23	Sukkur	1	-	-	-		

### 3.2.3 FLOOD AFFECTED DISTRICTS

S.#	District	Persons Died		Village Affected	Persons Affected	Houses Damaged	No. of Govt. Relief Camps	Persons in Govt. Relief Camps
		BE	NBE					
1	Kashmore	-	9	1,000	615,000	75,840	47	371,000
2	Shikarpur	15	26	1,599	790,000	64,556	322	80,831
3	Sukkur	6	10	130	247,913	2,957	231	106,056
4	Ghotki	-	5	380	290,000	45,000	171	45,600
5	Jacobabad	70	103	3,781	938,659	156,442	107	37,200
6	Larkana	4	3	115	490,000	22,000	710	141,341
7	Qambar	16	-	1,547	892,500	74,945	145	82,500
8	Khairpur	32	-	287	345,900	50,160	484	100,699
9	Naushehro	6	11	223	148,000	6,615	207	28,323
10	Dadu	19	27	1,166	920,105	168,112	432	123,000
11	S. Benazirabad	1	5	89	78,000	9,982	99	18,357
12	Hyderabad	4	6	35	125,000	5,000	148	57,612
13	Jamshoro	-	-	553	395,700	84,088	229	144,845
14	Matiari	1	-	31	45,600	1,511	47	15,187
15	T.M. Khan	-	4	79	36,578	1,060	32	10,560
16	T. Allahyar	-	-	-	-	-	162	13,464
17	Thatta	6	1	977	895,400	107,981	462	265,772
18	Badin	-	-	-	-	-	214	55,823

19	Sanghar	10	14	-	-	-	321	39,622
20	Karachi	-	-	-	-	-	62	83,687
	TOTAL	190	224	11,992	7,254,355	876,249	4,632	1,821,479

### 3.3. AFFECTED AREAS

The 15 Districts of Sindh were affected by the floods. However, seven of the fifteen were worst affected, which included Jacobabad, Kambar, Kashmore, Shikarpur, Dadu, Thatta and Jamshoro. The other affected districts included Ghotki, Khairpur and Larkana.

S. NO	DISTRICTS AFFECTED	
	2011	2010
1	Thatta	Thatta
2	Hyderabad	Hyderabad
3	Jamshoro	Jamshoro
4	Shaheed Benazirabad	Shaheed Benazirabad
5	Badin	Naushehro Feroze
6	Mirpurkhas	Dadu
7	Tando Muhammad Khan	Larkana
8	Tando Allahyar	Sukkur
9	Tharparkar	Ghotki
10	Khairpur	Khairpur
11	Ghotki	Shikarpur
12	Naushehro Feroze	Kashmore
13	Sanghar	Jacobabad
14	Matari	Kamber Shahdadkot
15	Umerkot	T.M. KHAN
16	Dadu	

### 3.4 DAMAGES

In order to ascertain damages to the houses, a rapid housing survey was conducted by the PDMA in coordination with respective District Governments, which identified **679,539** damaged houses, of which around **428,168** are completely damaged.



### **3.5 DAMAGES NEED ASSESSMENT**

The Planning & Development Department got conducted a detailed Damage Needs Assessment (DNA) to prepare an estimate of losses suffered during floods 2010. According to the physical ground survey of the teams sent by the Planning & Development, losses to the tune of Rs.464 billion or \$4.284 billion (approx.) have been incurred in the Sindh Province.

The DNA estimates compiled by Planning & Development Department were than counter checked/ verified by the teams of World Bank & Asian Development Bank. The World Bank and Asian Development Bank teams have endorsed the exercise conducted by P&D Department and verified losses of \$4.284 Billion which is 79% of the estimated losses reported by the P&D Department. The estimates prepared by World Bank/ Asian Development Bank is as under:

<b>Sr. No.</b>	<b>Sector</b>	<b>Financial Loss in 2011</b>	<b>Financial Loss in 2010</b>
		PKR millions	Billion
1.	Agriculture, Livestock and Fisheries	160,107	144.64
2.	Housing	85,465	134.34
3.	Roads	26,468	35.67
4.	Irrigation	4763	52.00
5.	Health	1258	3.90
6.	Education	12014	30.56
<b>TOTAL</b>			<b>453.11</b>

### **3.6 PAKISTAN CARDS**

In order to compensate the dejected population of rains 2011, Government of Sindh introduced cash transfer scheme namely '*Pakistan Cards*' by virtue of which Rs. 10,000/- to each "Head of Affected Family" have been disbursed. The cash transfer scheme originated after BOR notified the rain affected areas. NADRA and the two banks i.e. HBL & UBL have rendered their services in close coordination with PDMA and district governments. The said cash transfer scheme is in its final stage in 16 affected districts, where more than **1,198,551** Head of Family till 5<sup>th</sup> May, 2012 have received Rs. 10,000/- each. The financial costs borne by Government of Sindh till date amounts Rs. 12.889 billion.

### **3.7 CITIZENS' DAMAGE COMPENSATION PROGRAM (CDCP) PHASE – II.**

Similar scheme was introduced for the floods 2010 affected population whereby Rs. 20,000/- to the affected HOF were given as 1<sup>st</sup> tranche jointly funded by Government of Pakistan and Government of Sindh. During the first phase, 636,534 Watan Cards were issued with a financial implication of Rs. 13.04 Billion borne equally by the Federal and Provincial Government. Thereafter, to support the affected population to reconstruct their houses, the federal and provincial

government in collaboration with donor agencies have disbursed 40,000/- to each affected Head of Household (HoH). The second tranche disbursement is in progress. Till date, the financial relief provided is stated as under:

### 3.8 **RELIEF**

The Government had shown its commitment for providing immediate relief to the affected population both during monsoon rains 2011 & floods 2010. The honourable President of Islamic Republic of Pakistan established his camp in the provincial camp of Sindh and monitored the relief activities. This time, the senior officers of BS-21 and 20 were designated as “**District Coordinators**” to support Commissioners / Deputy Commissioners to ensure that the affected population demands are met in an effective manner by mobilizing people from all walks of life. All the relevant stakeholders provided immediate relief within their domain and PDMA lead the relief activities. The synopsis of relief expenditure by PDMA as well as Government departments during rains 2011 and floods 2010 is as under:

<b>Food Items</b>	
<b>Particulars</b>	<b>Expenditure</b>
<b>Family Packs</b>	<b>Rs. 1,041,823,624</b>
<b>Drinking Water</b>	<b>Rs. 19,792,382</b>
<b>Non Food Items</b>	
<b>Particulars</b>	<b>Expenditure</b>
<b>Tents, Plastics sheets, Mosquito nets</b>	<b>Rs. 1,020,306,020</b>
<b>De-Watering Pumps</b>	<b>Rs. 18,800,220</b>
<b>Miscellaneous</b>	
<b>Transportation</b>	<b>Rs. 71,709,340</b>
<b>Miscellaneous</b>	<b>Rs. 59,931,223</b>
<b>Total Expenditures</b>	<b>Rs. 2,232,362,809</b>

<b>Department</b>	<b>Budge Estimates 2011-12 (GOS)</b>	<b>Out Side Budget 2011-12 (GOS)</b>	<b>Federal Transfer 2011-12</b>	<b>Total</b>
Relief Commissioner	107.868	2,652.550	-	2,760.418
PDMA	248.990	2,063.658	-	2,312.648
UBL & HBL for Pak-Card	-	1138.9	1500.000	12,889.00
Irrigation Dept	-	720.000	-	220.000
Work & Services Dept	-	300.000	-	300.000
Public Health Services	-	864.080	-	864.080
Health Department	-	100.000	-	100.000
Agriculture Dept	-	1000.000	-	1000.000
<b>Total</b>	<b>390.258</b>	<b>20,159.860</b>	<b>1500.000</b>	<b>22,050.118</b>

### **3.9 INTERNATIONAL RESPONSE**

Initially the federal and provincial governments responded to the disaster through own resources, which however, were overwhelmed in the wake of the growing humanitarian crisis. Despite providing assistance during the unprecedented floods of 2010, the international community immediately responded to the appeal by the Government of Pakistan for international support for rescue and relief activities following 2011 floods.

### **3.10 CIVIL SOCIETY AND PRIVATE SECTOR RESPONSE**

The response of civil society organizations and the private sector to the floods in Sindh was rapid and extensive. In many cases local NGOs, worked extensively with the Government to provide emergency relief support provisions which included ration packs, water purification kits and tablets, shelter items (including tents, blankets and mosquito nets), sanitation kits and hygiene supplies, doctors and medical supplies, mobile and basic health care units especially for women and children. A particular focus was placed on health care services to avoid the spread of water- borne infections and other disease and to provide basic health care services, an example of which is an extensive program being implemented in the severely affected district of Tando Allahyar in Sindh. Media on their part covered the event extensively and played a significant role in raising awareness and mobilizing local and international resources for the disaster. Individuals and organizations from the

private sector, both from Pakistan and the global community have contributed significantly to the flood relief effort alongside the government and donor community.

### **3.11 EARLY RECOVERY**

**EARLY RECOVERY PHASE** has started since 1<sup>st</sup> January 2012. It includes intervention in 8 sectors / clusters which are Health, Education, Water & Sanitation (WASH), Nutrition, Food Security, Protection, Shelter and Community Infrastructure. Multi-Sectoral Damage Needs Assessment (MSDNA) exercise was conducted for **'Revised Flash Appeal (RFA)' worth USD 439.8 Million. The share of Sindh province in this is \$ 411,662,510. The RFA has been launched on 21<sup>st</sup> February 2012.** The Rehabilitation Department / PDMA Sindh played a lead role in filtering the relevant projects to be considered for Revised Flash Appeal. The projects for Early Recovery Framework have been approved in a joint meeting of Steering Committee with UN Office at Geneva on 21.02.2012.

The Early Recovery Framework is now rolled out for mobilization of required funds. As regards the Development Projects / Works, a Damages Need Assessment is under way in collaboration with Planning & Development Department Government of Sindh and World Bank / Asian Development Bank.

### **3.12 SHORTFALLS IN 2011 RAINS AND 2010 FLOOD RESPONSE**

- **Inadequate Flood Protection Arrangements:** The protective arrangements across Sindh province from Guddu to Kotri, finally throwing the water at sea was witnessed to be inadequate in terms of extending safeguards to vulnerable populations against the flood hazard;
- **Flood Early Warning Arrangements:** These are considered to be inadequate across flood prone regions in Sindh. Floods early warning radars are not deployed and the existing arrangements rely on flood gauging through Irrigation's telemetry system and a relatively rudimentary system deployed by the provincial line department; Community Early Warning mechanisms remained largely ineffective during the 2010 Floods due to temporary severance of cell and line communication;

According to Irrigation Department it can provide: 24 – 48 hours warning along Indus River. Such forecasting, however, did not result into to evacuation of vulnerable communities to safer locations during the 2010 Floods. There are no arrangements in place to forewarn vulnerable communities of flash flooding across the mountainous regions.

- **Encroachments into Floods Routes / Plains:** Much loss of life and property occurred during 2010 floods as a consequence of encroachments, settlement and intrusion of population along Indus. This resulted in causing hindrances in the smooth flow of water thereby creating unnecessary delays in water exit.
- **Reduced Water Storage Capacity:** Their storage capacities have reduced to a varying range: from 30-70% due to silting, thus reducing their flood impact mitigation capacities.

### **3.13 MONSOON RISK AND RISK ACCENTUATING FACTORS**

Flooding in rivers is generally caused by heavy concentrated rainfall in the catchments during the monsoon season, which is sometimes augmented by snowmelt flows. Monsoon currents originating in the Bay of Bengal and resultant depressions often cause heavy downpour in the Himalayan foothills. These are additionally affected by weather systems from the Arabian Sea (by seasonal lows) and from the Mediterranean Sea (through westerly waves) which occasionally produce destructive floods in one or more of the main rivers of the Indus system. However, exceptionally high floods have occasionally been caused by the formation of temporary natural dams by landslides or glacier movement and their subsequent collapse. These are large seasonal variations in almost all the river discharges, which further aggravates the river course and morphology.

The major rivers cause losses by inundating areas along their banks, by damaging irrigation and communication facilities across or adjacent to their banks, and by erosion of land along the riverbanks. In the upper part of the Indus Basin System, flood water spilling over the riverbanks generally returns to the river. However, in the lower Indus Basin, where the Indus primarily flows at a higher elevation than adjoining lands, spills do not return to the river. This phenomenon extends the period of inundation, resulting in even greater damages. Although embankments built along almost the entire length of the river in Sindh and at many locations in the upper Indus Basin have provided some protection against floods, poor maintenance of the bunds causes breaches. Such breaches often cause great damage because of their unexpected nature and intensification of land use following the provision of flood protection. In order to minimize such eventualities, double line of flood embankments have been constructed along almost both the banks from Gudu to few Kilometers short of sea.

Apart from this, the F.P bund was constructed to control flood flows from hill torrents in the command of Right Bank of Sukkur Barrage. It is 119.40 miles long, starting from the Manchhar lake in the south and Hamal lake in the north, extending 53 miles upwards opposite Usta Muhammad towards east along Khirthar Canal named new F.P band. This bund lies in two districts Dadu and Larkana protecting the command area of Khirthar, Warah, Dadu and rice canals.

## CHAPTER 4

### MONSOON HAZARDS IN SINDH

Floods are a potential threat to land, property, lives, and the ecosystem. Floods cause revenue loss and damage irrigation and drainage channels. There are large seasonal variations in almost all river discharge, which further affect adversely the river course. The most important local factors, to Muslehuddin's eye, is temperature obtaining in central Pakistan -- southern Punjab, upper Sindh and northeastern Balochistan -- during the monsoon months. "If these areas are having temperatures below 40 degree centigrade, the country will have a weak monsoon." If the current heat wave sweeping across the central parts of the country persists, expect monsoon to bring more showers than it normally does."

According to the experts, global temperature has increased by 1.5 degree centigrade, making weather patterns unpredictable. Also, rains have become inconsistent. They are now usually a sudden and heavy downpour than a steady shower.

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

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

The lower parts of Sindh are also experienced to be highly vulnerable due to LBOD. The heavy monsoon rainfalls when exceed the designed discharge capacity of LBOD caused extreme devastation as witnessed in 2011 rains. The LBOD pass through Shaheed Benazirabad, Sanghar, Mirpurkhas and Badin districts and has a designed discharge capacity of 4000 cusecs. Due to ill designed and as experienced in 2011, the districts of Mirpurkhas, Sanghar, Shaheed Benazirabad are highly vulnerable to LBOD floods.

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

heavy precipitation and cloud burst phenomenon can worsen the impacts of monsoons instigated disasters in province.

#### 4.1 DISTRICT PROFILE

S. No.	DISTRICT	Population (million)	No. of Talukas	TALUKAS	UCs
1.	BADIN	1.136	05	Badin , Talhar, S. Fazil Rahu, Matli, Tando Bago	49
2.	MIRPURKHAS	1.041	06	Digri, Kot G. Muhammad, Mirpurkhas, Sindhri, H.B Mari, Judho	41
3.	S. BENAZIRABAD	4.138	04	Nawabshah, Sakrand, Qazi Ahmed, Daur	51
4.	T. M. KHAN	0.447	03	T.M.Khan, Bulri Shah Karim, Tando Ghulam Hyder	
5.	TANDO ALLAHYAR	0.750	03	T.Allahyar, Chambar, Jhundo Mari	20
6.	THATTA	1.113	09	Thatta, Mirpur Bathoro, Mirpur Sakro, Ghorabari, Jati, Sujawal, Ketu Bunder, Shah Bunder, Kharochan	09
7.	DADU	1.106	04	Dadu, K.N. Shah, Mehar, Johi	52
8.	SANGHAR	186.947		Sanghar, Jam Nawaz Ali, Sinjhoru, Tando Adam, Shahdadpur, Khipro	
9.	GHOTKI	0.970	05	Ubauro	40
10.	THARPARKAR	1.298	04	Mithi, Diplo, Chachro, Nangarparkar	44
11.	HYDERABAD	1.6	04	Hyderabad City, Hyderabad Rural, Latifabad, Qasimabad	53
12.	UMERKOT	0.962	04	Umerkot, Samaro, Pithoro, Kunri	
13.	NAUSHEHRO FEROZE		03	N.Feroze, Bhriya, Kandiyaro	
14.	JAMSHORO	0.582	03	Kotri, Manjhand, Sehwan	28
15.	MATIARI			Matiari, Hala, Saeedabad	
16.	KHAIRPUR	0.630	07	Faiz Ganj, Mirwah, Naara, Khairpur, Kingri, Gambat, Sobhoderu.	
17.	Kamber Shahdadkot	16.6	7	Kamber, Mirokhan, Shahdadkot, Warah, Sijawal Junejo, Nasirabad, Quabo Saeed Khan	40
18.	Kashmore	662,462	03	Kashmore, Kandhkot, Tamgwani	37
19.	Shikarpur	1,078,876	04	Shikarpur, Khanpur, Lakhi, Garhi Yaseen	65
20.	Jacobabad	0.741	03	Jacobabad, Thull, Garhi Khairo	40
21.	Sukkur	2.953	05	Sukkur, New Sukkur, Rohri, Pano Aqil, Salehpat	
22.	Larkana	3.472	04	Ratodero, Dokri, Larkana, Bakrani	44
23.	Karachi				

#### 4.2 **DISTRICTS VULNERABLE TO MONSOON / FLOOD HAZARDS**

S. No	District	Hazard
1	Karachi (5 Districts)	Urban flooding
2	Thatta	Riverine Flood
3	Dadu	Riverine Flood, Flash Floods
4	Kambar Shahdadkot	Riverine Flood, Flash Floods
5	Larkana	Riverine Flood, Flash Floods
6	Khairpur Mirs	Riverine floods
7	Naushero Feroze	Riverine floods
8	Shaheed Benazirabad	Riverine floods, LBOD
9	Sanghar	Riverine floods, precipitation based flooding
10	Hyderabad	Riverine flooding, urban flooding
11	Kashmore	Riverine Floods
12	Jacobabad	Riverine Floods
13	Shikarpur	Riverine Floods
14	Matiari	Riverine Floods
15	Jamshoro	Riverine Floods
16	Sukkur	Riverine Floods
17	Ghotki	Riverine Floods
18	Tando Muhammad Khan	Riverine Floods
19	Tando Allahyar	Heavy Rainfall
20	Mirpurkhas	LBOD
21	Tharparkar	Heavy Rainfall
22	Umerkot	Heavy Rainfall
23	Badin	LBOD

#### 4.3 **RELIEF CAMPS**

S.#	Name of Relief Camp	Taluka
<b>UMERKOT</b>		
1.	Govt: High School No.I Umerkot	
2.	Govt; High School No.II Umerkot	
3.	Govt: Girls High School Umerkot	
4.	Govt; Boys Degree College Umerkot	
5.	Govt: Mono Technical Institute Umerkot	
6.	Govt: High School Vehro Sharif	
7.	Govt: Primary School Vehro Sharif	
8.	Govt: Girls Degree College Umerkot	



9.	Govt: High School Bodar Farm	
10.	Govt: High School Soofi	
11.	Govt: High School Dhoronaro	
12.	Govt: Cattle Farm Building Soofi (Vacant)	
13.	Govt: Higher Secondary School Samaro	
14	Govt: Primary School Main Samaro	
15	Govt: Girls Middle School Samaro Road	
15	Govt: High School Samaro Road	
16	Govt: Middle School Padhrio Farm	
17	UC office Satriyoon	
18	Govt: Primary School Mir Din Mohammad	
19	Govt: High School Saleh Bhambhro	
20	Govt: Primary School Araro Bhurghri	
21	Govt: Primary School Rasoolabad	
22	Govt; High School Qazi Sultan	
23	Govt: Primary School Qazi Sultan	
24	Govt; Primary School Old Kunri	
25	Govt: High School Mohd Khan Chandio	
26	Govt: Middle School Qazi Sultan	
27	Govt: Primary School Waran Khan Chandio	
28	Govt: Middle Boys School Dadhro	
29	Govt: High School Nabisar Road	
30	Govt: Middle School Doulat Khan Chandio	
31	Govt: High School Nabisar Town	
32	Govt: Cattle Farm Nabisar Road	
33	Govt: High School Muhammadabad Talhi	
34	Govt: Middle Boys School Old Talhi	
35	Govt: Primary School Ch: Iqbal	
36	Govt: Middle School Rasoolabad	
37	Govt: Primary School Sher Khan Rind	
38	Govt: Boys Higher Secondary School Pithoro	
39	Govt; High School Ghulam Nabi Shah	
40	Govt:Boys High School Shadi Pali	

41	Govt: Girls High School Shadi palli	
42	Govt: Girls High School Pithoro	
43	Govt: Middle School Ghulam Nabi Shah	
44	Govt: Middle School Turko Mangrio	
45	Govt. Mumtaz College Khairpur	Khairpur
46	Govt. Comprehensive HSS, Khairpur	
47	Govt. Girls H/S Luqman	
48	Govt. Girls H/S Nizamani	
49	Govt. High School Baberloi	
50	Govt. High School Mori.	
51	Govt. High School Machyoon	
52	Govt. High School Piryalo	Kingri
53	Govt. High School Pir-jo-Goth	
54	Govt. Degree College Pir-jo-Goth	
<b>SHIKARPUR</b>		
1	Tent City Near Shahi Bagh	Shikarpur
2	Tent City in the Cricket Ground of High School No. 02	Shikarpur
3	Tent City Near Sapna Petrol Pump	Shikarpur
4	Tent City Near Madarsa Jamia Madiniya DPO House Shikarpur	Shikarpur
5	Tent City Near Ibrahim Masjid Garhi Yasin Road	Shikarpur
6	Tent City Near Shankar Bharti Temple	Shikarpur
7	Tent City Near Railway Crossing DPO Office Road	Shikarpur
8	Tent City @ Sports Stadium Khanpur	Khanpur
9	Tent City @ Irrigation Bungalow Garhi Yasin	Garhi Yasin
10	Tent City Near Rural Health Centre Garhi Yasin	Garhi Yasin
11	Tent city @ Bus Terminal Chak	Lakhi
12	Tent City @ Sports Stadium Lakhi	Lakhi
<b>GHOTKI</b>		
1	Ground near Kamu Shaheed	Ubauro
2	Ground in Wasti Jeevan Shah near protective bund	
3	City Point, Ubauro City link road Bashirabad	
4.	Space near Mureed Shakh	
5.	Space near Ranwati	
6.	Government Primary School Main	Dharki
7.	Govt: High School Dad Laghari	
8	Govt: Primary School Naukot	
9	Government Primary School Allahbux Mahar	
10	BHU Keenjhur	
11	Govt: Degree College Ghotki	Ghotki
12	Govt: High School Qadirpur	
13	Govt: Primary School Gamero	
14	City Point, Adilpur	
15	Ground in village Bhir deh Khangarh	Khangarh

16	Ground in Village Ali Mahar	
17	Village Sardargah deh Kandhlo	
18	Village Lohi deh Lohi	
19	Village Bhetoor deh bhetoor	
20	Ground near UC Yaro Lund	Mirpur Mathelo
<b>TANDO MUHAMMAD KHAN</b>		
1	Govt: Boys Degree college	T.M Khan
2	Govt: Girls Science College	
3	Govt: Mono Technical College	
4.	Govt: High School	
5.	Govt: Girls (P) High School	
6.	Govt: Boys High School	
7.	Govt: High School Ramzan memorial	
8	Govt: High School Fuji Sugar Mill	
9	Govt: Middle School Lutufullah	
10	Govt: Boys Main Primary School	
11	Govt: Boys Primary School, T.M Khan	
12	Govt: Primary School B&R Colony	
13	Govt: Boys Primary School Palio Gumrani	
14	Govt: Boys Primay School Mir Mohallah	
15	Govt: Boys Primary School Kazio Patel	
16	Govt: Boys Primary School Tando Saindad	
17	Govt: Boys Primary School Haji Golo Jiskani	
18	Govt: Boys High School Abdul Rahim Katiar	
19	Govt: Boys High School Jinah Soomro	
20	Govt: Boys High School Dadoon	
21	Govt: High School, Bulri Shah Karim	
22	Govt: Girls Primary School Mushtarka Colony	
23	Govt: Girls Primary, Doolah Jo Pir	
24	Govt: Girsl Primary School, Tando Saindad	
25	Govt: Girls Primary School Shoukat Colony	
26	Govt: Girls High School, Bulri Shah Karim	
27	Government Boys High School, Mullakatiar	
28	Govt: Girls Middle School, Mullakatiar	
29	Govt: High School, Suleman Soomro	
30	Govt: Primary School, Suleman Soomro.	
<b>KAMBER SHAHDADKOT</b>		
1	Primary School Chunki	Shahdadkot
2	Irrigation Landhi (97000)	Qubo Saeed Khan
3	Dhori	
4	Regulator (Warah Branch-209)	Kamber
5	Zero Point (Garhi Kartio)	
6	Irrigation Landhi Gurkh	Warah
7	Garhi Banglow Hamal	
<b>SANGHAR</b>		
1	Govt: High School Khipro	Khipro
2	Govt: Primary School Sehnoji Road	
3.	Govt: Urdu Primary Sehonji Road	
4	Govt: Degree College	
5	Govt: High School Hathungo	
6	Govt: High School Khahi	
7	Govt: High School Baka Muhammad Halepoto	
8	Govt: High School Loon Khan	

9	Govt: High School bhit Bhatti	
10	G.P.S Sehonji Road	
11	GGHS Mirpurkhas Khipro	
12	GPS Main Sindhi	
13	GPS Choto Para	
14	GPS Dewan Colony	
15	Govt: Mono Technical College	
16	Govt: Islamia (N) High School	
17	GPS Keria Colony	
18	Animal Hospital	
19	BHU Khahi	
20	Movement Middle School Khaki	
21	GPS Urdu Hathungo	
22	GPS Sindhi Hatungo	
23	GPS Urdu Middle School Hatungo	
24	BHU Hathungo	
25	Madrssa Hatungo	
26	GPS Waryam Faqir	
27	GPS Qasim Mangrio	
28	Govt: Hospital Bhit Bhatti	
29	GPS Bhit Bhatti	
30	BHU Bhit Bhatto	
31	GPS Hamzo Khan Daris	
32	Govt: Middle School Hamzo Khan	
33	GPS Nabi Bux Rajar	
34	GPS Qazi Faiz Muhammad Rajar	
35	GPS Alamabad	
36	BHU Kamal Hingoro	
37	GHS Banko Chanio	
38	GPS Jadam Daris	
39	GPS Tadehari	
40	GPS Usman Hingoro	
41	GPS Naoabad	
42	GPS Muhammad Paryal	
43	BHU Yameen Hingoro	
44	BHU Malook Mahar	
45	GPS Jamal Shah	
46	GHS Sanghar	Sanghar
47	GHS (Khatoona Fatima) Sanghar	
48	GPS Sanghar	
49	GPS Siranwari	
50	GMS Middle Fathpur	
51	GPS 18 Male	
52	GHS Chak No. 03	
53	RTC JNA	Jam Nawaz Ali
54	50 beded hospital JNA	
55	GHS JNA	
56	GPS JNA	
57	Habib Public School JNA	
58	Govt: Middle School JNA	
59	Govt: Girls Primary School JNA	
60	GPS Sindhi Berani Town	
61	GPS Urdu, Berani Town	

62	GHS Berani Town	
63	Primary School Rabani Shah	
64	Primary School Ismail Shah Berani Town	
65	GPS Berani Town	
66	BHU Berani Town	
67	GGMS Naoabad	
68	GPS Naoabad	
69	Wapda Colony Naoabad	
70	District Quarters Naoabad	
71	BHU Naoabad	
72	UC-I Office	Shahdadpur
73	UC-II Office	
74	UC-III Office	
74	UC-IV Office	
75	GBH School Shahdadpur	
76	GPS Main Sindhi	
77	GPHS	
78	GPS Islamia	
79	GPS Rehmania	
80	GPS Mai Bakhtwar	
81	U.C Office Jatai	
82	GMS Jatia	
83	UC Office Soomar Fakir Hingoro	
84	UC Office Maldasi	
85	GMS Maldasi	
86	UC Office Lundo	
87	GHS Maqsood Rind	
88	UC Office Sarhari	
89	GHS Sarhari	
90	GPS Sarhari	
91	UC Office Gul Muhamamd Laghari	
92	UC Office Asghar Abad	
93	UC Office Barhoon	
94	GMS Amanullah	
95	UC Office Shahpurchakar	
96	GSH Shahpurchakar	
97	GGHS Shahpurchakar	
98	Mono Technical Institute	Tando Adam
99	New Aligarh College Tandoadam	
100	GHS Sanjan Junejo	
101	GHS Kumb Dharoon	
102	GMS Mullan Makhan	
103	GMS Ahmed Burira	
104	GPS Kamal Buriro	
105	GPS Landhi	
106	GMS Puro Fakir Shoro	
107	GHS Mir Hassan Mari	
108	GPS Arif Sandh	
109	GMS Mitho Khoso	
110	GHS Bakar Nizamani	
111	GHS Bakhsho Nizamani	
112	BHU Kump Dharoon	
113	BHU Gidar Aapan	

114	GD Bakar Khan Nizamani	
115	District Council Dispensary Mola Makhan	
116	Government Dispensary Rano Mal	
117	BHU Landhi	
118	BHU Bagho Wadadani	
119	BHU Khairo Kaloi	
120	BHU Mir Hassan Mari	
121	BHU Ali Mardan Jamali	
122	BHU Fakir Shoro	
123	Govt: Dispensary Sachedino Waryah	
124	GHS Sinjhor	Sinjhor
125	GPS Railway Sinjhor	
126	GPS Ibrahim Shaikh	
127	GHS Khadro	
128	GGHS Khadro	
129	GPS Wali Muhammad Talpur	
130	GPS Jumo Janwari	
131	GHS Grang Bunglow	
132	GHS Jhol	
133	GGHS Jhol	
134	GPS Sindhi Jhol	
135	GPS Qasi Shar Jhol	
136	GHS Rautiani	
137	GHS Rukan Burira	
138	GGHS Rukan Burira	
139	GPS Rukan Burira	
140	BHU Rukan Burira	
141	GGHS Suleman Chang	
142	GGHS Rukan Burira	
143	GPS Suleman Chang	
144	BHU Jiabad	
145	BHU Mian Dad Mangrio	
146	GPS Samand Faqir Mahar	
147	Middle School Bobi	
148	GPS Ch: Ghulam Rasool	
149	GHS Deh 25-Jamrao	
150	GPS Urdu Primary School Jhol	
151	GPS Bachal Wassan	
152	GPS 29-Jamrao	
153	Middle School 30-Jamrao	
<b>SUKKUR</b>		
1	Government Degree College	Sukkur
2	Government Islamia College	
3	Government Boys High School	
4	Government Main Primary School	Old Sukkur
5	Kundi Buffelo Loive Stock Farm Mando Dero	
6	Government Boys High School Ali Wahan	
7	Union Council Office Loung Bhatti	
8	Government Primary School (Boys) Shahdadu Muhalla Rohro	
9	Government Girls Higher Secondary School Rohri	
10	Government High School Nourai	
11	Government High School Hussain Kalwar	

12	Government Middle School Sangi.	
13	Government Higher Secondary School.	Pano Akil
14	Government Degree College	
<b>SHAHEED BENAZIRABAD</b>		
1	G.H.S Daulatpur	Kazi Ahmed
2	G.H.S Shahpur Jehania	
3	Government Degree College Daulatpur	
4	G.M.S Nawab Wali Muhammad	
5	G.H.S Bachal Pur	
6	GGPS Nawab Wali Muhammad	
7	G.H.S.S. Kazi Ahmed	
8	GGHS Daulatpur	
9	G.H.S Kazi Ahmed	
10	G.P.S Main (Boys) Kazi Ahmed	
11	G.H.S Hamal Kaloi	
12	G.P.S Shahpur Jehania Station	
13	G.P.S Sawan Noonari	
14	G.M.S Shahpur Jehania	
15	G.P.S Shahpur Jehania	
16	G.G.P.S Shahpur Jehania	
17	G.H.S Al-Noor Sugar Mills Shahpur Jehania	
18	G.P.S Mehboob Shah Mohallah Daulatpur	
19	G.P.S Main Urdu Daulatpur	
20	G.G.P.S Daulatpur	
21	G.P.S Karim Abad	
22	G.M.S Boys Phulail	
23	G.G.P.S Phulail	
24	G.P.S (Boys) Dino Machine/ G.M Dahri	
25	G.P.S G. M. Jatt @ Al-Noor Sugar Mill Stop.	
26	GMS (Boys) Shoukat Abad Kazi Ahmed.	
27	GPS (Boys) Unar Muhalla Kazi Ahmed.	
28	GMS Toti.	
29	GGPS Loung Soomro.	
30	GPS (Boys) Miskeen Mallah.	
31	G.H.S Mehrabpur	Sakrand
32	G.H.S Majeed Keerio	
33	G.M.S Rahib Shah	
34	G.M.S Bhiraro (Budhal Shah)	
35	G.H.S Sakrand	
36	Police Building Lakhat	
37	G.H.S Mashakh	
38	G.H.S Mari Jalbani	
39	G.P.S Ghanwar Mahar	
40	G.P.S Chhattan Shah	
41	G.H.S Sabu Rahu	
42	G.G.M.S Sabu Rahu	
43	G.P.S (Boys) Nakur	
44	G.P.S (Boys) Mahawali	

45	G.H.S Sukhio Manahjo	
46	G.H.S Md. Khan Magsi	
47	GGHS No. 2 Sakrand (GPS Sherwani Kirio)	
48	GBPS Noor Model Village Sakrand.	
49	GMS Fatuhal Zardari	
50	GPS Bukhsho Magsi	
51	GHS Essarpura	Nawabshah
52	GDC H/S Nawabshah	
53	GGHS Nawabshah	
54	GMPS Nawabshah	
55	GGF H/S Line Par	
56	GHS Haji Qabool M. Shah	
57	Govt. S. Anthony School Line Par	
58	GHS (B) Daur	Daur
59	GHS (G) Daur.	
60	GHS Gupchani	
61	GHS Bucheri	
62	GHS Bandhi	
63	GHS Jam Sahib	
64	GHS 60th Mile	
<b>HYDERABAD</b>		
01	Government College Kali Mori Hyderabad.	City
02	Government College for Boys Pretabad.	
03	Government High School Sir Ghulam Hussain Hidayatullah Pucca Qila Hyderabad.	
04	Government Noor Muhammad High School Hyderabad.	
05	Government Girls College Bakra Mandi	
06	Government City College Hyderabad.	
07	Government Comprehensive Boys School Unit No.10	Latifabad
08	Government Shaheed-e-Millat School Latifabad.	
09	Government Rooh-e-Islam School Unit No.4 Latifabad.	
10	Government Iqra High School Hali Road Hyderabad.	
11	Government High School Unit No.7	
12	Syed Qutub Ali Shah Middle School Hussainabad.	
13	H.D.A office Kohsar Ganjo Takkar	
14	Mono Technical College Kohsar Latifabad.	
15	Shah Latif Girls College Unit No.6 Latifabad.	
16	Public School Unit No.3 Latifabad.	
17	Allama Iqbal Boys High School Unit No.2 Latifabad.	
18	Government Girls High School G.O.R Colony Hyderabad.	
19	Government Degree College Unit No.11 Latifabad.	
20	Government Boys High School Unit No.12 Latifabad near Sidra Masjid Hyderabad.	
21	Government Islamic Qadria Primary School Hyderabad.	
22	Social Welfare High School near Custom House.	



23	Raees Khan Muhammad School Wahdat Colony Qasimabad.	
24	Government Primary School Adal Noonari.	
25	Government Girls High School Qasimabad.	Qasimabad
26	Government Girls High School Wahdad Colony Qasimabad.	
27	Government Primary School Noor Khan Chang Village Shah Bukhari Qasimabad.	
28	Government Primary School Ismail Chand Village Deh Mirzapur.	
29	Government High School Hatri	Taluka Hyderabad
30	Government Primary School Hatri	
31	Government Primary School Talib-ul-Moula Colony.	
32	Government High School Bhindo Sharif.	
33	Government Boys Middle School Deh Abri	
34	Government Primary School Village Gul Muhammad Jakhoro.	
35	Government Boys High School Village Moosa Khatian.	
36	Relief Camp at Village Jaro Babar Deh Boochki Tando Hyder.	
<b>KASHMORE</b>		
01	Railway Station Tangwani	Tangwani
02	Government High School Tangwani	
03	Government Primary School Karampur	
04	Government Primary School Hamid Malik	
05	Government Primary School Mir Ali Khan Sundrani	
06	Jhooly Lal Patrol Pump	Kandhkot
07	Lake view park Kandhkot	
08	Government High School Kandhkot	
09	Main Primary School Kandhkot	
10	Bus Terminal near City Park Kashmore	Kashmore
11	Dakhan banglow	
<b>THARPARKAR</b>		
01	Government Girls High School Mithi	Mithi
02	Government Primary School Noor Muhammad Colony Mithi	
03	GPS Meghwar Colony Mithi	
04	GPS Bheel Colony Mithi	
05	GPS East Bajeer Colony Mithi	
06	GPS Parha Colony Mithi	
07	GPS Dharmani Colony Mithi	
08	GHS North Colony Mithi	
09	GHS Mithi	
10	GMS Mithrio Bheel	
11	GPS Akheraj	
12	GHS Islamkot	
13	GPS Bajeer Colony Islamkot	
14	Union Council Kehri	
15	GHS Saleh Janjhi	
16	GPS Khario Ghulam Shah	
17	GPS Bhako	

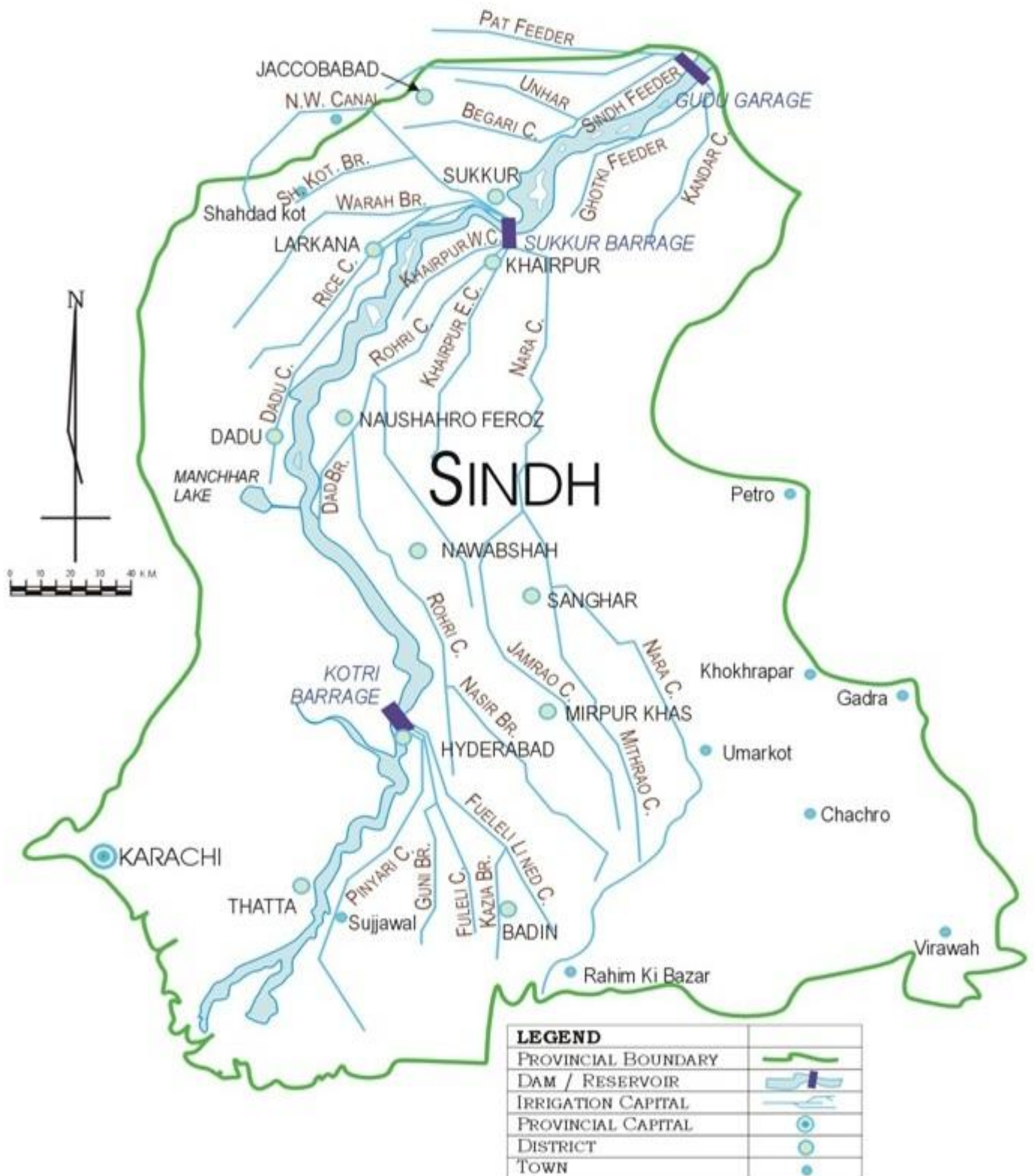
18	GPS Kherti	
19	Union Council Office Manjethi	
20	Union Council Office Sanyasar	
21	Union Council Office Vijuto	
22	Government Boys Degree College Diplo	Diplo
23	GPS Layakhro	
24	Government Middle School Arokhi	
25	Government Primary School Saghrore	
26	Government Primary School Helario Pir	
27	Government High School Verhar	
28	Union Council Office Jhirmiryoy	
29	Government Primary School Paneli	
30	Government Primary School Rohal	
31	Government Primary School Kareveri	
32	Union Council Office Malanchhaho	
33	Government Primary School Talo Jam	
34	Government Primary School Kahiari	
35	Government Primary School Sadoi	
36	Government Primary School Phararo	
37	Government Primary School Kharo Dabhro	
38	Government Primary School Seengaro	
39	Government Primary School Belo Notiar	
40	Government Primary School Gorwari	
41	Government Primary School Jeruo	
42	Government Primary School Seenhar Khuee	
43	Government Primary School Khankhanyar	
44	Government Primary School Chhaho Suthar	
45	Basic Health Unit Chhahi Moora	
46	Government High School Khetlari	
47	Government High School Gurrirabah	
48	Government Middle School Nabisar	
49	Basic Health Unit Mir Muhammad	
50	Government Middle School Rehman Abad	
51	Government High School Kaloj	
52	Government Primary School Dodo Jat	
53	Government Primary School Ibrahim Dars	
54	Government Primary School Wango More	
55	Government High School Chachro	Chachro
56	Government Primary School Naupuro	
57	Government Primary School Goongio	
58	Government High School Chelhar	
59	Government Primary School Udani	
60	Government Primary School Rajoro	
61	Government Primary School Vaori Dora	
62	Government Primary School Mubarik Rind	
63	Government High School Janjhi	
64	Government High School Chanore	
65	Government High School Sakrio	
66	Government Primary School Tardos	
67	Government High School Keetar Qazi Suleman Nohri	
68	Government Middle School Jetrar	
69	Government High School Khensar	

70	Government Primary School Mithrio Sattar Malka	
71	Government Primary School Dhore Gadhro	
72	Government High School Jesse Jo Par	
73	Government Primary School Gadhro	
74	Government Primary Peerani Jo Par	
75	Government Primary School Karnghari	
76	Government Primary School Qabool Jo Par	
77	Government Primary School Bagal	
78	Government Primary School Sajan Jo Par	
79	Government High School Nangarparkar	Nangarparkar
80	Government Middle School Mondaro	
81	Government Girls Primary School Lakar Gadio	
82	Government Middle School Kasbo	
83	Government Middle School Dedvero	
84	Government Middle School Verawah	
85	Government High School Danodandhal	
86	Government Middle School Soondar	
87	Government Primary School Mamchero	
88	Government Primary School Kubri	
89	Government Primary School Kharoro	
90	Government Primary School Hidar Deda	
91	Government High School Mithrio Halepota	
92	Government Primary School Satidera	
93	Government Primary School Orhamar	
<b>THATTA</b>		
01	GHS, Ketibunder	Ketibunder
02	GHS, Baghan	
03	GPS, Garho	
04	Irrigation Bunglow, Garho	Kharochan
05	Vetinary Hospital, Garho	
06	GPS, Mirpur Sakro	
07	GHS, Mirpur Sakro	
08	GHS Garho	Ghorabari
09	GHSS Ghorabari	
10	GHSS, Mirpur Sakro	Mirpur Sakro
11	GGHS, Mirpur Sakro	
12	GHS, Buhara	
13	Basic Health Unit, Buhara	
14	GGHS, Gharo	
15	GMS, Dhabeji Town	
16	GBHS, Mills Area Market	
17	GBHS, Ghulamullah	
18	GHS, Lait	
19	GHS, Gujjo	
20	GMS Hussain Dal	Shahbunder
21	GPS Juman Sanghar	
22	GHS Chach Jehan Khan	
23	GPS Chach Jehan Khan	
24	GHS Chuhar Jamali	
25	GMS Chuhar Jamali	
26	GBPS Chuhar Jamali	
27	GGPS Chuhar Jamali	
28	GPS, Jati	Jati

29	GPS, Mughal Been	
30	GGPs, Jati	
31	GGHS Jati	
32	GGPS, Muhammad Rahim Palijo	
33	GPS, Haji Younis Mirbehar	
34	BHU, Kothi	
35	GPS, Abdul Karim Jat	
36	GMS Ameen Mori	
37	GPS Ranjars Zeero Point	
38	GPS, Haji Ali Muhammad Samejo	
39	GPS, Haji Sadiq Memon	
40	GHS Jati	
41	GBHS, Sujawal	Sujawal
42	Government Girls College Sujawal	
43	GPS (Urdu) Sujawal	
44	GGHS Sujawal	
45	Government Boys College Sujawal	
46	GBHS Bello	
47	GMS Bhad Mori	
48	GMS Ranta	
49	GMS Kot Almoon	
50	GHS Saeedpur	
51	Government Primary Chandia School Sujawal	
52	GHS Mirpur Bathoro	Mirpur Bathoro
53	GHS Darro	
54	GPS Darro-I	
55	GHS Jhoke Sharif	
56	GHS Laiqpur	
57	GHS Bano	
58	GBD College Makli	Thatta
59	GBHS Makli	
60	GGD College Thatta	
61	GGHS Sheerazi Mohalla Thatta	
62	GHS Ongar	
63	GGPS Ongar	
64	GHS Jherruck	
65	GGHS Jherruck	
66	GBMS Hilliya	
67	GBHS Sonda	
68	Olda Lucka Banglow	
69	GPS Old Chilliya	
70	GHS Jhimpir	
71	GHS Jungshahi	
72	GGHS Jungshahi	
<b>NAUSHEHRO FEROZE</b>		
1	Muhbat Dero Sial	Kandiaro
2	Khalso	
3	Khairo Kalhoro	
4	Hussain Heesbani	

5	Fateh Ali Jatoi	
6	Juman Samtio	
7	Nawab Kalhoro	
8	Manjuth	
9	Gh:Mohiuddin Sethar	
10	Bhorty	Kandiaro
11	Dalipota	
12	Thatt Goraho	N' Feroze
13	Old Jatoi	Moro
14	Deparja	
15	Purn	
16	Old Gachero	
17	New Gachero	
<b>BADIN</b>		
1	Government Buildings of Badin	
2	Government Buildings of Matli	
3	Government Buildings of Golarchi Town	
4	Government Buildings of Talhar	
5	Government Buildings of Tando Bago Town	
6	Government Buildings of Pangrio Town	
7	Government Buildings of Kadhan Town	
8	Government Buildings of Tando Ghulam Town	
9	Government Buildings of Kario Ganhwar Town	
10	Pir Ali Shah Stadium, Badin	
11	Islamia Degree College Badin	
12	Poly Technical Institute, Badin	
13	Morvee College, Badin	

#### 4.4 MAP OF RIVER INDUS PASSING THROUGH DISTRICTS OF SINDH PROVINCE



# Sindh Map Showing Irrigation Net work and Flood Protective Embankments



#### **4.5 CHANGES IN THE RIVER MORPHOLOGY**

The unprecedented nature of rains of 2011 and 2010 Floods caused occurrence of unregulated river flow patterns resulting in widened spans and erosions, at places. During Monsoons these trends are likely to render populations residing close-by at risk; undermine the effectiveness of the protective arrangements; and, risk severance of bridges and communication infrastructure; therefore, river training or regulating river flows to defined channels is considered essential for flood impact mitigation.

#### **4.6 PERFORMANCE OF WATER REGULATORY INFRASTRUCTURE**

The unprecedented heavy rains of 2011 and floods of 2010 in addition to their colossal humanitarian impacts exposed the water regulatory infrastructure to tremendous pressures. The water which flowed surpassed the earlier records by many folds; a detailed comparison is given in the table below. The performance of these regulatory facilities is doubtful even if subjected to slightly higher pressures than their design capacity.

##### **4.6.1 WATER FLOW COMPARISON**

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

<b>Drain</b>	<b>Design Capacity (in cusecs)</b>	<b>Maximum Recorded (in cusecs)</b>	<b>Year</b>	<b>2011 Floods (in cusecs)</b>	<b>Comparison with Earlier Record (Ratio)</b>	<b>Comparison with Design Capacity (Ratio)</b>
LBOD	4000	9000	2003	18000	2.0	4.5

#### **4.7 RISKS AND VULNERABILITY ANALYSIS**

There are five risks accentuating factors which must be addressed through short, medium and long term responses:

- i. Deficient capacity to disseminate Early Warning to vulnerable populations and communities. Improving upon early warning to the vulnerable populations must be addressed urgently by deploying a combination of technical and operational measures
- ii. Changes in Rivers Morphology as a consequence of the 2010 unprecedented Floods. It causes untrained flow patterns which can endanger populations residing in close vicinity, the protective and communication infrastructure even in a moderate flood situation;
- iii. Encroachments, resettlement and Population intrusions along into the river beds and flood plains;



- iv. Depleted flood water impact mitigation capacities of reservoirs due to silting;
- v. Vulnerable population's reactions to the Monsoon Flooding are likely to be driven by fear and panic, thus, complicating response.

#### **4.8 AIM**

To manage monsoon emergencies by putting in place requisite mitigation measures and a well coordinated and integrated response.

#### **4.9 OBJECTIVES**

While encouraging stakeholder's participation, following are the objectives set for the Monsoon Contingency Planning:-

- i. To enhance the effectiveness and timeliness of emergency response.
- ii. To ensure that emergency response is coordinated, through the clarification of goals, strategies, roles and responsibilities.
- iii. To anticipate and overcome difficulties.
- iv. To strengthen response coordination between Provincial Government Departments, District Governments, humanitarian organizations (UN Agencies) and INGOs/NGOs.

#### **4.10 SCOPE**

- i. Stakeholder's participation, awareness and mobilization through Monsoon Contingency Planning.
- ii. Determine disaster scenarios and corresponding caseloads.
- iii. Resource Mapping for response and identifying deficiencies.
- iv. Define sectoral response strategies, plans and coordination measures

#### **4.11 COORDINATION ARRANGEMENTS**

Under the supervision of Ministry of Water and Power, FFC is responsible for coordination of flood impact mitigation, prevention, preparedness and response in Pakistan. Pakistan Metrological Department (PMD) assumes responsibility for ascertaining and communication of early warning to relevant national and provincial stakeholders. Armed forces coordinate response (Search and rescue) related measures. NDMA assumes responsibility for coordinating the overall response and relief at national level. Provincial governments pivot provincial coordination for flood preparedness which includes inputs form districts and Provincial Irrigation Department for flood prevention and mitigation and host of measures involving numerous provincial departments and ministries for preparedness and response.

PDMA Sindh constitutes the focal point for coordinating provincial preparedness and response to disasters besides post disaster recovery and rehabilitation functions. Its functions include coordination, hazard risk reduction, preparedness and response related measures related to planning for floods and

flash floods, need assessments, resource mobilization and generating required response.

This entails horizontal coordination with host of government line departments and autonomous bodies that furnish early warning, undertake search and rescue, conduct relief operations and meet needs of vulnerable segments, while vertical coordination occurs with Districts. PDMA Sindh coordinates execution of these functions with all provincial entities and federal agencies i.e. Pak Armed Forces, NDMA, Emergency Relief Cell, Pakistan Metrological Department etc. PDMA Sindh also constitutes the point of contact for deploying external assistance for disaster response through UN agencies, INGOs and donors consistent with provincial and national policies. Similar processes are followed at the district tier by DCOs assisted by the newly formed DDMAAs.

#### **4.12 SCENARIOS:**

##### **4.12.1 Hazards and resulting emergency.**

The Flash Flood 2007 presents serious damages inflicted by Cyclone Water of Baluchistan which passed through Sindh, caused flood in River Indus System, which was contained with normal preparedness of Provincial and National government wings in river belt, but caused huge damaged to private and public property.

##### **4.12.2 SCENARIO – 3**

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 , over 700,000 cusecs is a high flood level and above 900,000 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 large 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 Baluchistan 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 Flash Flood of Baluchistan flows to Sindh through depression and finds way to fall in river Indus at Sehwan, it results in:

- 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

#### 4.12.3 **SCENARIO 2:**

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

#### 4.12.4 **SCENARIO 1:**

There is low flow in Indus River System. Hence, there is no emergency arise. Provincial Government will take care of.

#### 4.13 **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 due to less water flow in lien years
- Raised ground level of river bed due to heavy winds
- Encroachments in river belt- construction of small dykes and other obstructions

#### 4.14 **Risk Analysis:**

Base on the experience of flood 2007, it is expected that there will be high flood in River Indus System and flash flood in Baluchistan through monsoon, which too contributes its levels.

The risk analysis is undertaken as under:

<b>Risk Analysis</b>	<b>Level</b>	<b>Comments</b>
Probability	<b>Level 2. Likely:</b> Historically Flood cycle indicates that during 2010 rain and flood is of high magnitude.	PDMA to closely monitor the flood forecast through Early Warning Network through PMD , ministry of Water & Power's Flood Warning Cell , Irrigation and Power

		Deptt Sindh, NDMA, so as, to attend the emergency in coordination with provincial government departments including Civil Defence Organization and civil society organizations.
Consequences	<p><b>Level B: Major:</b></p> <ul style="list-style-type: none"> <li>• Locally displace people in Riverian and Coastal belt area in province.</li> <li>• Damage to crop area</li> <li>• Loss of livestock</li> <li>• Lost of footstock</li> <li>• Shortage of food items</li> <li>• Rise in food prices</li> <li>• Disease and hunger</li> <li>• Loss of income generation opportunities</li> </ul>	Prepare Humanitarian assistance contingency plan in close coordination with National (NDMA), Provincial (PDMA). It would reduce the chances of colossal loss
Overall Risk	<p><b>High:</b></p> <ul style="list-style-type: none"> <li>• Loss of human life / bread earner</li> <li>• Loss of livestock</li> <li>• Food shortage due to crop damage</li> <li>• Eruption of infectious disease</li> <li>• Cut of communication line- road and railway.</li> <li>• Market disruption</li> <li>• Increase in poverty incidence</li> </ul>	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.

#### 4.15 Population at risk:

The population at risk in case of Flood in River Indus / Flash Flood from Baluchistan is about 1.0 million people in riverian, Kachho (area between western mountains and flood protection bund and coastal area. The latter is affected through surface drainage effluent:

- River belt people in Sindh as shown in map at [Map](#) .

#### **4.16 Anticipated duration of emergency:**

The emergency in case of flood varies place-to-place in general it ends:

- Scenario 3: Between three to six months ( June- Nov.)
- Scenario 2: Three months ( July-Sept)
- Scenario 1: for about one month ( August )

#### **4.17 TRIGGERS FOR RESPONSE**

##### **4.17.1 Indus River System**

- Flooding / overtopping of Sukkur Barrage
  - Early warning through Pakistan Meteorological Department Flood Forecasts / Warnings and Weather Forecasts
  - Early Warning through Irrigation Department
  - Early Warning through the existing mechanisms;
  - Flood Warnings by the District Administration and community based mechanisms.
  - PMD Monsoon forecasts of heavy precipitation in Indus River catchments

##### **4.17.2 LBOD**

- Overtopping of LBOD
  - Early warning through Pakistan Meteorological Department Flood Forecasts / Warnings and Weather Forecasts
  - Early Warning through SIDA
  - Early Warning through the existing mechanisms;
  - Flood Warnings by the District Administration and community based mechanisms.
  - PMD Monsoon forecasts of heavy precipitation in Indus River catchments

4.18 **PROVINCIAL HAZARD RISK AND VULNERABILITY MAPPING**

**VULNERABLE POINTS**

Sr.No	Vulnerable points	Vulnerable UCs
<b>DADU</b>		
1	L.S Bund, Mile 58/3 near Patt Village Taluka Dadu.	Bothero, Radhan, Thariri Mohbat, Beto, Gahi Mahessar, Baledai, Kazi Arif, Kolachi, Mehar, Mangwani, Khan jo Goth, Mangwani, Faridabad, Nao Goth, Shah Panjo, Bali Shah, Pipri, Siyal, Pat, Phulji, Moundar, Khudabad, Allahabad, Phulji, Bahawalpur, Pat Gul Mohd. Drigh Bala, Kamal Khan, Johi, Chinni, K.N.Shah Town, Dhani Bux Bughio, Butra, Kande Chukhi, Mittho Babar Thalho, Paria, Chore Qamber, Gozo, Burira.
2	L.S Bund, Mile 77/2 at Siyal Village near Dadu –Moro.	
3	L.S Bund, Mile 78/3 at Aminani Village Taluka Dadu.	
4	F.P Bund, Zero Point (RD-0(1200 ft))	
5	F.P Bund, RD-50	
6	F.P Bund, RD-147 (800 ft)	
7	F.P Bund, RD-211	
8	MNV Drain, RD 0 to 335 (67 miles)	
9	Superio Bund, RD -49 (550 ft)	
10	GAJ Diversion Bund, RD 0-32 (6.4 miles)	
<b>Canals</b>		
1	Dadu Canal	
2	Rice Canal	
3	Juhi Branch	
<b>KHAIRPUR</b>		
1	Ulra Jagir, 04 Mile Dharo & Where wash	Baberloi, Mori, Kot Mir Muhammad, Hadal Shah, Sadarji, Ahmed Pur, Ripri, Khemtio, Agra, Jado Wahan, Sagyoon, Pir Hayat Shah.
2	Fareed Abad Band, 0/0 to 2/2 & 11/0 to 12/0	
3	Razi Dero Band, Mile 6/0 wave wash & Dharo portion	
4	Garhi Pathan, 0/0-2/1 and 2/1-4/0	
5	Jamsher Loop, 13/4 to 14/0	
6	Bhatti Pir Qasim, 28/2 – 34/0	
7	Baharo, 33/0-36/0	
<b>JACOBABAD</b>		
1	Begari, 01 Mile (Right) Village Tego Khan Teghani District Kashmore	U.C No.2, U.C No. 6, U.C No.9, U.C No.10, U.C No.12, U.C No.13, U.C No.14, U.C No.15, U.C No.1, U.C No.2, U.C No.3, U.C No.4, U.C No.5, U.C No.6, U.C No.1, U.C No.2, U.C No.3, U.C No.4, U.C No.5, U.C No.6, U.C No.7, U.C
2	Begari, 32 Mile (left) village Mian – Jo- Goath District Shikarpur	
3	Begari, 38 Mile (left ) Village Muhammad Nawaz Khoharo District Shikarpur	
4	Begari, 66 Mile (Left) Village Begy Sunnani Taluka Gahri Khario	

5	Begari, 39 Mile (left) Village Mughalpur District Shikarpur	No.8,U.C No.9,U.C No.10,U.C No.12,U.C No.13,U.C No.14,U.C No.15, U.C No.16, U.C No.17, U.C No.18,U.C No.19	
6	Begari, 48 Mile (Right) Village Nadir Khoso Taluka Jacobabad		
7	Begari, 51 Mile (Right) Village Qadir Pur Taluka Jacobabad		
8	Desert Canal, 43 Mile (Left ) Village Abdul Ghani Khoso Taluka Thul		
9	Desert Canal, 63 Mile (Left )Village Abdul Haq Khoso Taluka Thul		
10	Kherthar , Sharam pur Bridge, Taluka Gahri Khero Lakho Bridge , Taluka Ghari Khero , Garrange Regulator , Taluka ghari Khero		
<b>UMERKOT</b>			
1	Thar Canal RD-33 NIP side		
2	Thar Canal RD-34 IP side		
3	Thar Canal RD-48 NIP side		
4	Thar Canal RD-52 NIP side		
5	Mithrao Canal RD-254 to 258 NIP		
6	Mithrao Canal RD-308 to 312 NIP		
7	Mithrao Canal RD-410 to 418 NIP side		
<b>NAUSHERO FEROZE</b>			
1	S.M Bund Mile 12/4	Deparja, Lalia, Fatu Balal, Gachero, Mithiani, Kamal Dero, Mohbat Dero Jatoi, Abad, Dabhro, Bhority.	
2	Manjuth Loop Bund 33/0		
3	S.M Bund Mile 37/4 (Bhorthi Site)		
4	S.M Bund Mile 49/2		
5	Left guide Bank 0 to 3000 ft U/S & O to 800 ft D/S		
6	Right guide Bank 0 to 3420 ft		
7	J-Spur Dadu-Moro Bridge 0/3280 down stream		
<b>HYDERABAD</b>			
1	Ghaliyon Front Bund, Mile 3/0 to 5/2 Taluka Hyderabad.	Ghaliyoon, Shah Bukhari, Giddu Bandar, Malh, Malh Ganjo Takkar, Ganjo Takkar.	
2	Ghaliyon Front Bund, Mile 7/0 to 9/0 Taluka Hyderabad.		
3	Ghaliyon Front Bund, Mile 10/0 to 12/7 Taluka Hyderabad.		
4	Hajipur Bund, Mile 8/0 to 8/4 Taluka Hyderabad.		
5	Hajipur Bund, Mile 12/4 to 13/5 Taluka Hyderabad.		
6	Jamshoro Front Bund, Mile 1/0 to 2/0 Taluka Qasimabad.		
7	Giddumal Front Bund, Mile 1/5 to 4/4 Taluka latifabad.		

<b>SHIKARPUR</b>		
1	Sukkur Begari Bund mile 0/0 to 4/6 single and open for wave wash	Hamayoon Jaggan, Sultan Kot, Jahanwah, Lodra, Karan, Jano, Khanpur except town, Garhi Dakho, Rahim Abad, Mian Sahib, Zarkhail, Thanhrio, Shabirabad, Garhi Tegho, Pir Bux Shujra, Mahmood-A-Bag, Taib, Wazirabad, Rustam, Sehwani, Chak, Bhirkan, Mungrani, Bhanbhihar, Nim Sharif, Jindo Dero, Mirzapur, Amrote Sharifam.
2	Sukkur Begari Bund mile 11/6 to 15/6 near Chak town	
3	Sukkur Begari Bund mile 0/0 to 4/6	
4.	Sukkur Begari Bund mile 41 Taki to 19/3	
5	Section II-A mile 0/0 to 2/0	
6	Ruk Loop Bun 0/0 to 0/5	
7	Ruk Spur No. 3	
8	Ruk Spur mile 0/5, 1/1, 1/6 and 2/3	
<b>KAMBER-SHAHDADKOT</b>		
1	RD-181, Village Akber Khoso	Khando, Mirpur, Gaji Khuhawar, Ghaibi Dero, Dost Ali, Kalar, Boohar, Khabar, Karera, Aitbar Khan, Silra, Jamali-III City, Qubo, Hazarwah, Bago Dero, Lakha, Miandad.
2	RD-478, Rabi – Pul	
3	RD-478, Rabi- Pul	
4	RD-169, Village Mujeed Magsi	
5	RD-177, Village Seth Khudadad Khoso	
6	RD-178, Village Seth Khudadad Khoso	
7	RD-179, Village Kaber Khoso	
8	RD-184, Village Jan Muhammad Khoso/ Kachi Pul	
9	RD-186, Village Jan Muhammad Khoso/ Moosa Khoso	
10	RD-194, Village Jagirani	
11	RD-196, Village Khushhal Magsi	
12	RD-198, Village Essa pur	
13	RD-203, Village Ashique Ali Mugheri / Seelra Village	
14	RD-213, Village Khan Wah / Aamir Chandio	
<b>SUKKUR</b>		
1	Length on left a Bank Start from River Indus Mile 0/0 mile Ali Wahan to gemro bund, 44 Mile	Bagarji, Tamachani, Bachal Shah Miani, Ali Wahan, Loung, Bhatti, Panhwar, Nouraja, Nindapur, Sadhuja, Sangi, Hingoro, Baiji.
2	Sukkur begari bund on Right bank of River Indus start from 0/0 Mile jilandpur to Garang, 07 Miles.	
3	Inside the protective walls within the City limits, Aprox : 2 Miles.	
4	RD – 03 R/S Bunder Wall	
5	RD – 05 to 07 L/S Bunder Wall	
6	RD – 12 R/S Bunder Wall	
7	SB Bund mile 0/0 to 4/6 (R/S Old Sukkur)	
8	Baiji Bund L/S mile 8/3 + 330 ft to	



	8/4 +330 ft	
<b>KASHMORE</b>		
1	J-head Guide Spur	Khewali, Colony-I, Kashmore-2, Geehalpur, Gublo, Badani, R.B.Chachar, Gulanpur, Sodhi, Kumb, Buxapur, K.S.A. Bilawal, Zoregarh, Dari, Haibat, Maheer, Akhero, Daulatpur, Kajli, Karampur, Jamal, Duniapur, Saifal, Gul Wali, Lalao, Tangwani, Lashari, Rasaldar, Cheel, Suhliyani.
2	KK feeder Bund RD-79 to 84.50	
3	KK Link Bund RD-79 Mile 0/7 to 1/3	
4	KK Bund Mile 18/0 to 18/6.	
5	KK Bund Mile 20/0 to 24/6	
6	S.B Bund Mile 30/0 to 33/0	
7	S.B Bund Mile 11/6 to 15/0	
8	S.B Bund Mile 0/0 to 4/6	
9	Haibat Bund Mile 17/3 to 19/2	
10	Tori Bund Mile 2/5 to 3/4	
11	Kashmore Bund Mile 19/2 to 21/6	
12	Gouspur Bund (Old) Mile 10/0 to 11/4.	
13	Gouspur Bund (New) Mile 0/0 to 04.	
<b>JAMSHORO</b>		
01.	Larkana Sehwan Bund mile 88 to 92	A.B Shoro, Kotri, Jamshoro, Morho Jabal, Petaro, Amri, Lakha, Manjhand, Sann, Talti, Channa, Sehwan.
02.	Larkana Sehwan Bund mile 92 to 102	
03.	Manchar containing Bank R.D 7.0	
04.	Manchar containing Bank R.D 6.2	
05.	Manchar containing Bank R.D 80 to 85	
06.	Sann Veeh Dari Bund Mile 4/2	
07.	Sann Veeh Dari Bund Mile 7/4	
08.	Sann Veeh Dari Bund Mile 9/4	
09.	Sann Veeh Dari Bund Mile 11/6	
<b>THARPARKAR</b>		
01.	Spinal Drain (LBOD)	

02.	Dhoro Puran	
<b>THATTA</b>		
1	Sonda	Sonda, Kalon Kot, Jherruck, Tando Hafiz Shah, Doomani, Chato Chand, Mahar, Khan Udasi, Kotri Allah Rakhio shah, Mureed Khoso, Jati, Kar Malik, Gul Mohd. Baran, Begna, Kothi, Chuhar Jamali, Goongani, Daulatpur, Ladiun, Kharochan, Ketu Bunder, Banno, Bachal Gugo, Lalkpur, Darro, Bello, Bijora, Ali Bahar, Jar, Kinjhar.
2	Hilaya	
3	Ali Bahar	
4	P.B Bund 13/0 to 13/4 Miles	
5	Dolrah Bridge 13/4 miles	
6	Hajipur 0/0 to 0/5	
7	Hajipur 3/7	
8	Hajipur 6/0 to 6/2	
9	Hajipur 8/0 to 8/4	
10	Hajipur 12/4 to 13/5	
11	M.S Bund 13/12	
12	M.S Bund 5/7	
13	M.S Bund 18/3	
14	1 <sup>st</sup> Surjani Bund 0/0 to 1/5	
15	2 <sup>nd</sup> Surjani Bund 0/0 to 1/5	
16	M.S Bunds 42/5 to 44/3	
17	M.S Bunds 43/5+100 to 43/7+500	
18	Googani Chor Bund 0/0 to 0/7	
19	Kuka Link Bund 6/0 to 7/0	
20	Kuka Link Bund 9/4 to 20/6	
21	Kuka Link Retarded Bund 0/0 to 3/0	
22	B.U Bund 17/4 to 16/2	
23	B.U Bund 27/5 to 5	
24	B.U bund 35/3	

**MIRPURKHAS**

1.	Doulatpur Minor near Mirwah Road & village Jagirdar Muhammad Moosa Channa.
2	02.Khumbri Minor near B.H.U Khumbri and village Syed Altaf Hussain Shah
3	Sim Nala Near Ratnabad Mirpurkhas city
4	Deh 111 village Haji Munthar (Sim Nala in loose condition)
5	Deh 115 Village Chutto Mari -do-
6	Deh 118 Village Venhal Panhwar -do-
7	Deh 120 Village Sugar Mill Colony -do-
8	Deh 95 Village Mewati -do-
9	Deh 93 Village Dargah Sheer Mohd Shah -do-
10	Deh 94 Village Haji Ali Dino Mari -do-
11	Deh 99 Village Ali Muhammad Mehar -do-
12	Jamrao Canal
13	Naseer Canal
14	R.D 215 near village Muhammad Umar Bhurguri
15	R.D 212 near village Shams Din Gorchani deh 255
16	R.D 202 near village Gulsher

	Gorchani deh 256	
17	R.D Main Spinal R.D-435. NJP side near village Abdul Khaliq Bhurguri deh 221.	
18	R.D 157 near Bashirabad deh 259.	
19	R.D 479 near village Abdul Karim Muhajir.	
20	R.D 448 (MPS) near village Noor Ahmed Bhurguri deh 256	
21	R.D 451 near Nawab Aziz Deh 335, 336.	
22	Small Sim Nala R.D 404, Deh 350,349,351 near village Chandio.	
.23	Main Sim Nala Dehs- 341, 341/A, 342, 355, 358, 359, 362, 374, 375, 376, 319, 319/A, 319/B, Portion of deh Dehti.  02.Puran Dhoru Dehs – Deh Dehti, 264, 315, 316, 317, 318, 318/A.	

**TANDO MUHAMMAD KHAN**

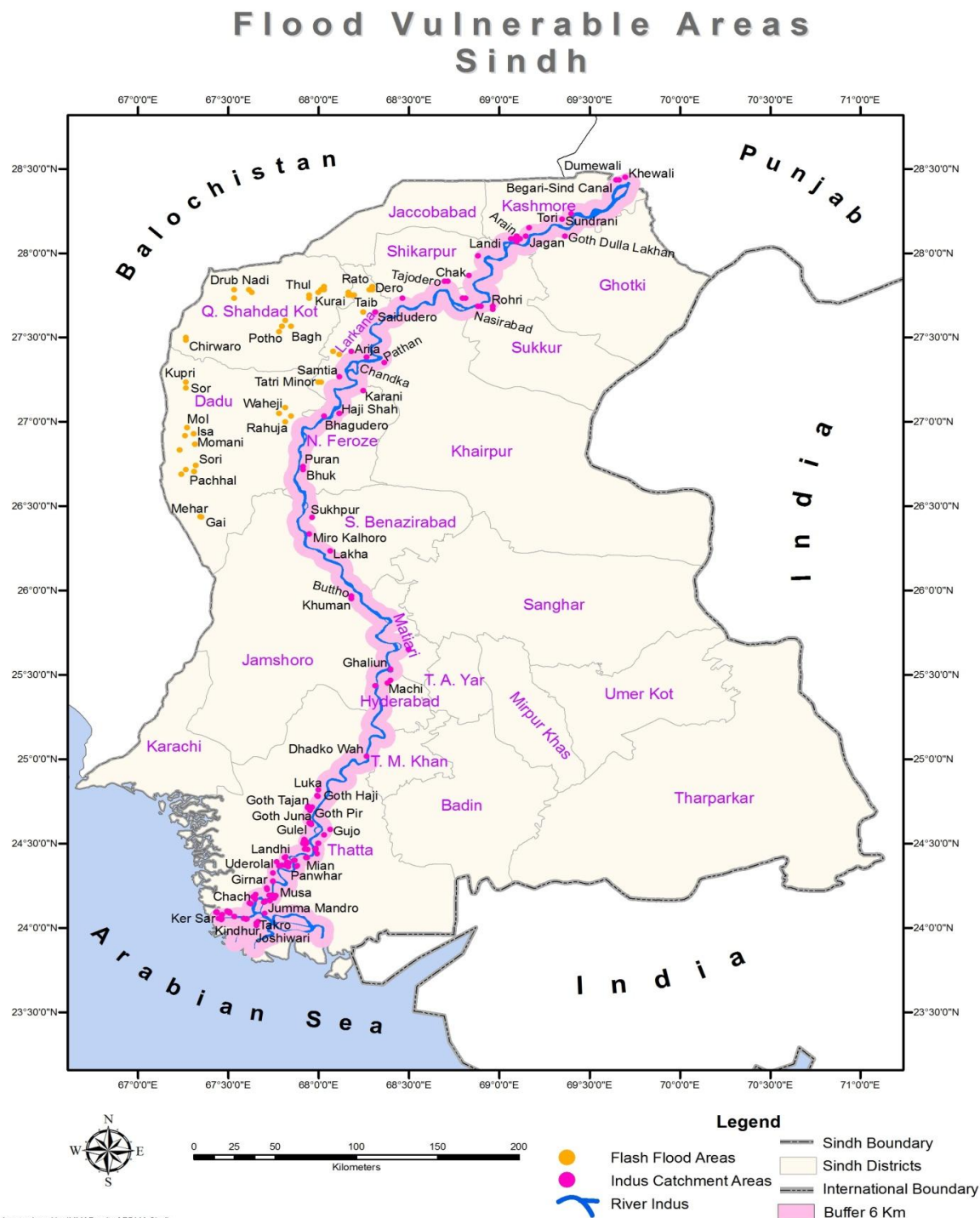
1	Son Paari	
2	Part of Shoukat Colony, Deh Patgai.	
3	Naseerabad Mohalla	
4.	Usman Chutto, Hajipur	
5	Ramzan Brohi Hajipur	
6	Habibdino Mirbahar Hajipur	
7	Qado Mirbahar Hajipur	
8	Muhammd Mirbahar Hajipur	
9	Rahim Bux Chutto Hajipur	
10	Juman Dal Mullankatiar	

11	Moledino Mirbahar Tikhar	
12	Sharif Khaskheli Tikhar	
13	Malook Shah Dhandabo	
14	Ali Muhammad Miranpur	
15	Gidda Miranpur	
16	Sang Mian Khokhar	
17	Haji Karam ali Khokhar	
18	Shafi Muhammad Jamari Rayati Shor	
19	Mirbahar Rayati Shore	
20	Janoo Macchi Khalso	
21	Mushtraka Colony Dodi	
22	Shoukat Colony Dodi	
23	Behrani Mohalla Dodi	
24	Muhammad Bux Laghari Deh Douki	
25	Boor Laghari Deh Chhachri	
26	Bachal Laghari Deh Bareji	
27	Mitho Chang & Idrees Grano Deh Machhari	
28	Kamal @ Booro Chang Deh Ahmedani	
29	Faiz Muhammad Nizamani Deh Erazi	
30	Deh Gulshan	
31	Moya Deh Sathiyari	
32	Sono Khan Chandio Deh Kath Bhambhan.	
<b>Ghotki</b>		
1	L.M Band Old, Mile 0/0 to 3/1 Mirpur Division	Qadirpur, Muhammad Khan

2	Qadir pur Loop Bund, Mile 5/0 to 7/2 Mirpur Division	Ghoto, Bago Daho, Langho, Wasti Jiwan Shah Ranwati, Chandia, Khambhra, Kamu Shaheed, Jhngal Malik at Reti, Dad Leghari, Berula.
3	Gamero Band, Mile 12/0 to 13/0 Ghotki Division	

5.19

**SINDH HAZARD MAP MONSOON 2011**



## CHAPTER 5

### MONSOON PREPAREDNESS AND PLANNING

#### 5.1 IRRIGATION DEPARTMENT PRE MONSOON FLOOD MITIGATION STRATEGIES

The Provincial Irrigation Department of Sindh has been combating two main challenges on “war footing basis” viz:

- i) Evacuation of ocean of flood water
- ii) Restoration of damaged Irrigation infrastructure

**i. Evacuation of flood water:**

Irrigation Department has been successful to evacuate 95% flood water with a planned strategy with-in timeline with joint coordination of public representatives, WAPDA and other line departments

**ii. Restoration of Damaged Irrigation Infrastructure:**

Following are the components for the Restoration of damaged Irrigation Infrastructure.

- Canal Irrigation/ Drainage System
- Flood Protection works along River Bunds.

**• Canal Irrigation System/ Drainage System**

Overall 3566 breaches occurred in 6 canal systems of the three barrages have been plugged and strengthening work in progress under the supervision of consultants M/S NESPAK. About 90% work is completed. Significant water is allowed in canals & is being increased gradually. Total funds released to date from Federal and Provincial Government stand out to be Rs. 5 Billion.

**• Flood Protection Works along River Bunds**

➤ Out of 76 Flood emergent schemes, CDWP has approved 64 schemes costing Rs.14.40 Billion. The remaining 12 Nos. schemes costing Rs.404 Million could not be approved due to funding problem. Looking to the financial constraints, out of 64 approved schemes, 39 schemes are prioritized for implementation within committed amount of Rs.5.0 Billion. The details are as under:

Sr. #	Region	Proposed Schemes (Nos.)	Cost Rs. Million	Date of start	Timeline	Status
1.	Guddu Barrage.	09	1238.84	17-02-2011	30-06-2011	85%
2.	Sukkur Left Bank	08	991.20	26-02-2011	30-06-2011	75%
3.	Sukkur Right Bank	09	1256.47	24-02-2011	30-06-2011	75%
4.	Kotri Barrage	08	887.06	17-02-2011	30-06-2011	80%
5.	SIDA	05	627.49	25-02-2011	30-06-2011	75%
<b>TOTAL</b>		<b>39</b>	<b>5000.0</b>	--	--	<b>78%</b>

## 5.2 PROVINCIAL DISASTER MANAGEMENT AUTHORITY - PDMA FLOOD PREPAREDNESS MEASURES

PDMA Sindh has undertaken a series of flood preparedness meetings with districts and provincial departments. This contingency plan is the outcome of the consultations.

- **Articulation of Command and Control:** Secretary Rehabilitation in consultation with **Chief Secretary** Sindh will be responsible for Response & Relief Operations. Director General PDMA on his behalf will head a Composite Team (comprising representatives of Lead Agencies/Departments and focal persons of support organizations) to coordinate response & relief operations.
- **Provincial Emergency Operation Centre** would be established on the first alert/forecast/advisory for Monsoon, received from Pakistan Meteorological Department. The PEOC will be functional till the recession of floods. The PEOC shall receive and transmit flood / water level information thrice in flood season and on hourly basis during emergency.
  - **Purpose:** The coordination and collection of information and resources to support disaster/emergency/ incident management activities
  - **Location:** PDMA Sindh at Karachi and Regional offices at Hyderabad & Sukkur.
  - **Functions:** The PEOC will be a central coordination, command and control facility responsible for carrying out emergency preparedness and emergency management functions at a strategic level in an emergency situation, and ensuring the continuity of response operations. PEOC will perform following core functions:



- **Coordination and communications;**
  - Policy / Plan /Decision making
  - Operations
  - Resource dispatch and tracking; and
  - Information collection, analysis, and dissemination
  - Preparing operational updates situation reports and
  - Hosting Visitors (VIPs) briefings and debriefings
- PDMA has directed the districts to place sufficient funds (2% of the district budget) to utilize the funds to make up any deficiency in preparedness measures in addition to rescue and relief activities for 2011 monsoons.
- Boats, OBMs (Out Board Motor), tents, dry ration, food items are being procured, to be placed at the disposal of DDMAAs.
- 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 coordinated with all UN agencies and humanitarian partners to maintain a stock (Food and NFI including shelter) for the 2011 monsoons.

### **CHALLENGES:**

- The focus is to restore social services delivery, livelihoods and bringing normalcy after meeting the basic shelter, health and food security needs. This is where general inadequacy in both resources and planning has been identified in most of the districts.
- Sectors that need to be supported substantially by both provincial resource mobilization and through humanitarian / federal support are housing, health, livelihood regeneration, agriculture and livestock, restoration of road access and above restoration public services i.e. water supply, communication and education.
- Given the frequent incidences of floods in Sindh during monsoon season the government has taken adequate measures for flood control and management down to district level. The resource 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.

#### **a. Immediate response**

The PDMA in collaboration with partners has to closely monitor the situation and market prices on regular basis. PDMA pre-position the food and identify

storages in the nearby and secure vicinity. Logistic arrangements should be done in advance keeping in view the options available in the case of crisis. An initial rapid assessment will be carried out to identify the areas and target beneficiaries.

The PDMA will arrange the transportation of food to the Flood Displaced Persons (FDP) to further distribution. 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.

**b. Emergency needs assessment**

There is need to undertake rapid assessment after emergency for determining the requirements of affected people, Humanitarian and other, at short and long term period in association with all concerned stakeholders also UN Agencies.

**c. Distribution arrangements**

The Humanitarian assistance is to be distributed through CSO/ NGOs in coordination of Provincial / District Governments, NDMA, DDMA.

**d. Implementing partners:**

Provincial / District Governments, NGOs/ Civil Society and UN Agencies.

**e. Monitoring and reporting arrangements**

The PDMA through District Government Field offices and in liaison with local NGOs, CSO, Local institutions is to report on daily basis on standard format.

**f. External coordination arrangements**

International Donor / UN Agencies and charity organizations are to be coordinated.

**5.3 Food Resources Availability:**

**a. Market Availability**

Food is available in market to meet the emergency requirements.

**b. Likely actions**

- List of potential suppliers
- Agreement with suppliers
- 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 generally support in Emergencies are UN Agencies.

#### **5.4 Logistics:**

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

- i. Food 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 DP will be identified by the implementing partners

##### **b. Storage:**

- Main storage facilities are assessed of government and NGO storage capacities.

##### **c. Telecommunications: office, vehicle, convey**

- 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.

#### **5.5 Flood Management Plan**

##### **a. Decision-making structure**

All decisions are to be made by PDMA in coordination to other partners, like Home, Local Government Department, Irrigation Department, District Governments and Armed Forces.

##### **b. Office and sub-office requirements**

No special offices will be required, since at district, sub-district accommodation is available only additional stop arrangement for staff and furniture and related material be needed.

**c. Staffing requirements: existing and additional staff**

Existing staff will be sufficient only short period casual staff be needed.

**d. Media /Public information strategies**

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

**5.6 Budget**

PDMA has Rs. 100 million under Emergency Fund located in Finance Department will be available on need.

**5.7 DISTRICT LEVEL FLOOD PREPAREDNESS:**

Districts across Sindh reflect diverse capacity to respond. However, basing on the experience of 2010 floods all the districts across Sindh have already put in place a comprehensive mechanism for prevention, mitigation and response of floods. The DCOs / DDMA's and its officers assisted by support staff will spearhead response; the salient 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 1<sup>st</sup> 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 revenue department and irrigation departments have joined 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.
- DCOs 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 centres 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.

## **5.8 FLOOD MANAGEMENT PLAN FOR DISTRICT.**

### **➤ 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 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 specialized training programs for different levels of officers, employees and voluntary rescue workers in the district.
- To facilitate community training and 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 Vulnerable 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.

### **5.9 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.

### **5.10 PROVINCIAL HEALTH DEPARTMENT'S FLOOD PREPAREDNESS MEASURES.**

#### **PRE:**

- Provide specific information required regarding precautions for epidemics
- Establish a health mobile team in district & town headquarter hospital
- Setup an information center to organize sharing of information
- Collaboration with relevant organizations/ partner NGOs

#### **DURING:**

- Providing emergency treatment to the affectees

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

#### **POST:**

- Establishment of medical camps, vaccination, ensuring safe food & water in camps.
- Conduct Impact Assessment on Health, intervene to stop outbreak of diseases
- Rehabilitation of health infrastructure

#### **CHALLENGES**

- The potential of 2012 floods to deteriorate the health situation of population summons special attention. Severe floods can not only cause destruction to health care infrastructure (already scarce health facilities in Sindh which were adversely affected in 2011 rains and 2010 floods) but it will also affect health indicators of the affected population.
- The vulnerability to endemic diseases stands enhanced after the floods due 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.

#### **5.11 PROVINCIAL EDUCATION DEPARTMENT'S FLOOD PREPAREDNESS MEASURES.**

#### **PRE:**

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

#### **DURING:**

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

#### **POST:**

- Assessment of damages & needs of affected educational institutes



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

**CHALLENGES:**

- The rains of 2011 and floods 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 year also need repair & maintenance and are not fit to be used as relief camps, hence this would pose a serious threat in accommodating the affectees.

**5.12 PROVINCIAL AGRICULTURE DEPARTMENT'S FLOOD PREPAREDNESS MEASURES.**

**PRE:**

- Assessment of high prone areas and estimation of possible damage
- Create Community Seed Bank at UC level
- Regular surveillance of irrigation systems
- Close coordination with Meteorology Department & other stakeholders

**DURING:**

- Immediate mass awareness and update of situation
- Arrangements for relief & temporary shelter camps in Canal rest houses.

**POST:**

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

**5.13 PROVINCIAL IRRIGATION DEPARTMENT'S FLOOD PREPAREDNESS MEASURES.**

Following measures are being taken for upcoming Monsoon 2011:

- Establishment of Flood Control Centers.
- Liaison with armed forces and civil administration.
- Clearance of bunds and normal maintenance etc.

- Soaking arrangement along bunds is made by pumping water from river into wetting channels.
- Stock piling of Abkalani Materials along bunds.
- Stock piling of stone boulders at erosion sites.
- Construction of Katcha Landhis along bunds for patrolling staff.
- Engagement of patrolling staff.
- Round the clock patrolling by staff to check occurrence of leak etc.
- Deployment of heavy machinery viz. dozers, excavators etc. at vulnerable sites.
- Making wireless communication arrangements (Departmental).
- Lighting arrangements at vulnerable sites.
- Arrangement of transportation for department's officers and supervisory staff.

The Irrigation Department would seek assistance of Armed Forces for deployment of its troops along bunds after expected discharge of 8 lac cusecs or emergency situation as deployed in 2006 Flood. Police/Rangers patrolling along bunds would also be requested, to provide security to Irrigation staff at the very start of flood season. The Agriculture Department's dozers would to be sought for their deployment of bunds. In case of emergency situation, the Forest Department's help would be sought for procurement of forest material. The District Government would be requested for deployment of Cherr labour/prison labour, in case of emergency. District Administrations of Shaheed Benazirabad, Sanghar, Mirpurkhas, Badin and Thatta would help in controlling cuts to LBOD and other main drains by local people. The Finance Department is believed to enhance the allocation of O&M funds according to flood intensity as original allocation for O&M of Bunds is quite meager / nominal.

### **CHALLENGES:**

- Formulation of legislation to:-
  - Check development / construction of illegal Zamindara Bunds, permanent settlements, and encroachments in river / flood plains
  - Removal of all illegal bunds affecting safety of existing flood protection bunds and other structures
- People living in Kachha areas be relocated. Least is that they may be allowed to utilize Kachha area only for cultivation.

- Provision of escape channels through embankments linking both guide bunds at Khairpur - Larkana and Dadu - Moro bridges.
- Designs of both embankments be re-evaluated to:-
  - Enhance lateral strength
  - Enable these to withstand flood water
- Feasibility study by I&P Dept 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
- Capacity building of I&P Dept in terms of provision of equipment to fight the floods, specially the breaches. Sheet Piling may be evaluated and its feasibility be ascertained
- Manchar Lake bund should be raised at 121 feet RL+ 6 feet and entire bund should be stone pitched
- Complete or partial re-modeling of Aral Tail and Aral Head to increase capacity
- Alternatively, a study should be carried out to ascertain escape spillway direct to Indus from Manchar
- Provision of heavy machinery (cranes/dozers) at division / district level

#### **5.14 PROVINCIAL LIVESTOCK & FISHERIES DEPARTMENT'S FLOOD PREPAREDNESS MEASURES.**

##### **PRE:**

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

##### **DURING:**

- Update local communities of ongoing situation
- Provide Livestock vaccination
- Arrangements for relief & transportation of livestock

##### **POST:**

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

#### **5.15 PROVINCIAL PLANNING & DEVELOPMENT DEPARTMENT'S FLOOD PREPAREDNESS MEASURES.**

##### **PRE:**

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

##### **DURING:**

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

##### **POST:**

- Gathering statistical data regarding actual damages & recovery needs from all relevant departments
- Plan & Identify potential resources
- Facilitate other departments in planning and execution of rehabilitation in cost effective manner
- Coordinate with all line departments

#### **5.16 PROVINCIAL REVENUE DEPARTMENT'S FLOOD PREPAREDNESS MEASURES.**

##### **PRE:**

- Assessment of high prone areas and estimation of possible damage and needs for recovery
- Arrangements of financial resources and facilitation in getting tax exemptions to institutions/NGOs/INGOs focusing on disaster management

##### **DURING:**

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

##### **POST:**

- Assessment of damage of industry/business, crops and live stock and settlement of applicable taxes accordingly

#### **5.17 PROVINCIAL POLICE DEPARTMENT'S FLOOD PREPAREDNESS MEASURES.**

##### **PRE:**

- Information dissemination through “**15 helpline service**” to local residents
- Prepare Plan, Teams & their training for emergency intervention

##### **DURING:**

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

##### **POST:**

- Ensure security to workers of NGOs and INGOs.
- Development of Contingency Plan
- Provide security in un-safe areas.
- Facilitation to institutions/NGOs/INGOs which focus on rehabilitation activities.

#### **5.18 PROVINCIAL CIVIL DEFENCE DEPARTMENT'S FLOOD PREPAREDNESS MEASURES.**

##### **PRE:**

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

##### **DURING:**

- Rescue & evacuation and deployment of volunteers
- Communicate to DEOC any additional resources required for performing rescue & evacuation activities.
- Taking precautionary measures to stop fire-incidents in camps & perform firefighting in emergency

##### **POST:**

- Identify gaps, make future plan to overcome weaknesses

- Assisting district administration & other line departments in rehabilitation works

#### **5.19 PAKISTAN METEOROLOGICAL DEPARTMENT'S FLOOD PREPAREDNESS MEASURES.**

##### **PRE:**

- Update & upgrade forecast equipment
- Pre-flood monitoring of all flood protection infrastructures
- Preparation of District/Area-wise Comprehensive Flood Fighting Plan by the Provinces/Federal Line Agencies

##### **DURING:**

- 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/ nullahs during flood season.
- Effective arrangement for liaison with Flood Forecasting Division (FFD) Lahore/ Pakistan Meteorological Department and WAPDA for issuance of flood warnings well in time upto the levels of District Administration.
- Association of local abadies/beneficiaries for co-ordinated flood management & protective measures as social mobilization.

##### **POST:**

- Identify gaps, make future plan to overcome weaknesses of department
- Assisting district administration & other line departments in rehabilitation works
- 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 with in two months. Remedial measures should also be started immediately wherever required.

#### **5.20 ARMED FORCE'S FLOOD PREPAREDNESS MEASURES.**

##### **PRE:**

- Prepare necessary equipments, labour, transportation means and other materials for emergency intervention
- Evacuation of public to safe areas before the disaster

- Assisting line departments in protecting roads, bunds etc from getting flooded

**DURING:**

- Providing rescue services, medical support, logistic backup and transportation of relief material
- Establishment of relief camps.
- Remove hindrances from roads & installation of temporary bridges & bunds.
- Collate information and warn appropriate Army units

**POST:**

- Assisting district administration & other line departments in rehabilitation of affected areas.

Army will only assist civil administration in rescue phase of floods. On formal requisitioning of Army in flood relief operation, all available resources will be mobilized. The assets available with Armed Forces and committed for deployment are as under

Resources	Quantity
Army Helicopters	14
PAF & Navy Helicopters	4 to 6
Boats (including 68 Civil Boats)	563
OBMS (including PN & Civil)	484

Moreover, the resources of Government of Sindh held with Pakistan Army are as under:

Sr. No.	Items	Sa	PWS	RA	US	Total	Def	Sur
1	Boats (Yamaha)	15	10	62	8	95		
2	OBM 15,25,30,40 & 55 HP	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 Asst M-2	-	14	12	4	30		
7	De-Watering pumping Set (All Types)	40	-	10	-	50		
8	Anchors	77	37	-	3	117		

## **5.21 LOCAL / INTERNATIONAL NGOs**

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



## 5.22

## Districts Need and Gap Analysis

Sr.	District	Water Tanker	Boats	Boat Trolley	Tractor with trolley	Mini Truck	Ambulance	Refuge Van	Bulldozers	Excavator	Crane	Dumper	Generators	Dewatering Pumps	Hoad Trolley	Tents/Tarpolime	Life Jackets	Fire Extinguisher	Respirators	Oxygen Cylenders	Stretcher	Gas Mask	ladder	Fire Suit	Emergency Lights	Emerg. Staff kit	Hygiene Kit	Kitchen Kit	Mosquito Net	Water Tanks	Food Bags	Jery Cane (20 L)	Walky Talky	Vfone	Mega Phone	No. of sites	
1	Hyderabad	0	10	0	1	5	0	0	1	1	1	0	0	50	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	154	
2	Thatta	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	72
3	Badin	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4	Tando Allahyar	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	17
5	Tando Muhammad Khan	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	30
6	Umerkot	20	40	0	0	0	0	0	0	0	0	0	10	20	0	5000	1000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0	0	0	94
7	Tharparkar	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
8	Sangharh	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0
9	Mirpur Khas	0	10	0	0	0	2	0	0	0	0	0	0	0	0	0	20	50	5	10	10	40	6	20	50	0	0	0	0	0	0	0	5	0	10	0	
10	Khairpur	0	0	0	0	0	0	0	0	0	0	0	0	25	0	5000	0	0	0	0	0	0	0	0	0	0	0	0	0	5000	0	0	0	0	0	19	
11	Matari	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0
12	Naushahro Feroz	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	16	
13	Kashmore	0	20	0	10	0	0	0	10	0	0	0	20	40	0	5000	2000	0	0	0	0	0	0	0	1000	5000	0	0	0	0	0	0	0	0	0	34	
14	Shaheed Benazirabad	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	71	
15	Jacobabad	0	20	10	0	0	0	0	0	0	0	0	0	0	10000/25000	50	0	0	0	0	0	0	0	0	0	10000	10000	25000	0	0	60000	0	0	0	0	90	
16	Dadu	12	100	0	20	0	20	10	10	0	25	80	40	300	30000	5000	0	0	0	0	0	0	0	0	0	0	0	0	100	0	0	0	0	0	0	0	
17	Shikarpur	0	50	0	80	40	0	0	15	0	0	20	20	0	20000/30000	100	0	0	15	0	0	0	0	145	90	45000	50000	0	0	0	0	0	0	0	40	12	
18	Kambar Shahdad Kot	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	144	
19	Larkana	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0
20	Ghotki	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	9	
21	Jamshoro	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	45	
22	Sukkur	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	15	
23	Karachi	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	27	
Quantity Required		32	250	10	111	45	2	20	11	36	1	25	130	195	300	130000	8170	50	5	25	10	40	6	20	1195	90	60000	60000	25000	100	5000	60000	5	0	50	849	
Available		6	46	0	57	0	0	0	0	0	0	0	33	210	270	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
Gap		26	204	10	54	45	2	20	11	36	1	25	97	-15	30	130000	8170	50	5	25	10	40	6	20	1195	90	60000	60000	25000	100	5000	60000	5	0	50		

List of DCS				
Name	District	Phone No.	Fax. No	Mobile No
Mr. Roshan Ali Shaikh	Karachi	9231161-75	9231152	0300-22738844
	021	9205604		
Agha Shahnawaz	Hyderabad	9200112-3	9200114	0300-2003636
	022		R.2721180	
Mr. Muhammad Abbas Baloch	Khairpur	9280200-1	9280202	0300-2282356
	0243			
Mr. Gulam Haider Mangrio	Sanghar	541781	541601	030-02007793
	0235	541844		
MR.Hafeez Siyal	Thatta	920060	O:920058	0300-8379253
	0298	920061	R:920062	
Mr Sajid Jamal Abro	Jacobabad	652020	653711	3002418881
	0722	653999		
Mr. Syed Ghanzafer Ali Shah	N. Feroze	448348	448881	0301-3992423
	0242	448256		
Dr. Saeed Azher Hussain	Shikarpur	920200	920202	0300-8292460
		920201		
Mr. Rashid Ahmed zardari	S.Benazirabad	9370334-7	9370338	0300-9372704
	0244			
Mr.Nasir Abbas Somoro	Dadu	9200250	9200252	0312-3335333
	0254	9200251		
Mr. Kazim Hussain jatoi	Badin	861001 hs991151	861471	0300-8319836
	0297	862362		
Mr. Manzoor Hussain Jatoi	Sukkur	9310834-5	R:9310619	
	071		O: 30638	
Mr. Nadeem -ur- Rehman	Mirpurkhas	9290052	9290055	0300-8377697
	0233	9290053		
Mr.Maqqoom Shakeel-ur-Zaman	Tharparkar	261667	261818	0333-2006222
	0232	261899		
Mr. Zaid Abbasi	Ghotki	652016	651424	0331-3487423
	0723			
Mr.ASIF Hyder Shah(cmsnr larkana).Abdu Aleem Lashary(Dc)	Larkana	9410336-8-4	9410334	0333-21448800-03452079416
	0741	9410354		
Mr. Aga Sohail Ahmed Phattan	Jamshoro	870135	871199	0300-3561274
	0223	871942		
Mr.Mhnawer Ali Mithani	Kashmore	570901-3	570902	0300-3415399
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		4210537		
Mr. Syed Ahmed Ali Shah	Umerkot	570700	571474	0300-3140070
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Mr. Shahid laghari	Matiari	2760033	2760032	0322-5838955
	022			
Mr. Syed Barkat Rizvi	T.M.Khan	41560	40292	0321-2420108
	02233	42160		
Mr.Syed Mehdi Shah	T.Allahyar	3892911	3892909	0333-2363353
	022	3892908		

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