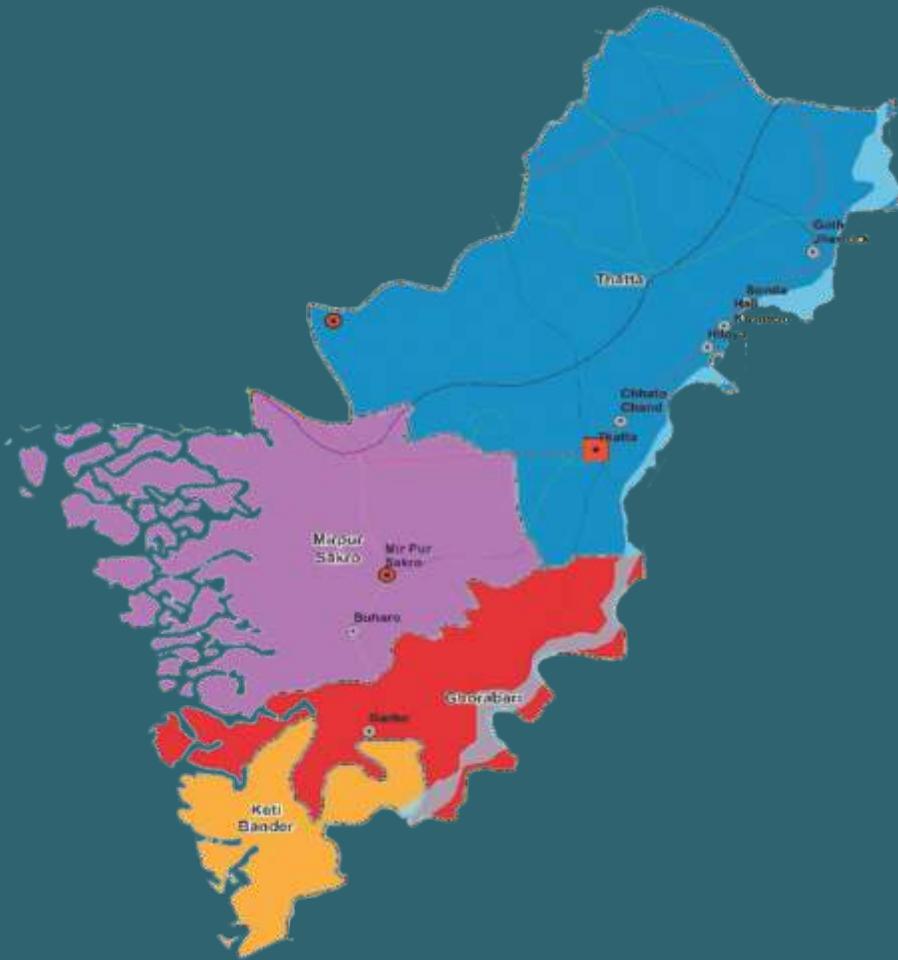


DISTRICT DISASTER MANAGEMENT PLAN (JULY 2017 - JUNE 2027)



DISTRICT THATTA GOVERNMENT OF SINDH



Published by:

The District Disaster Management Authority (DDMA), District Thatta under the supervision of Provincial Disaster Management Authority, Sindh

Funding Support:

The Malteser International funded project “Strengthening of Resilience through DRR & Livelihoods Measures in Vulnerable Coastal Communities in District Thatta, Sindh Province, Pakistan” under financial support of German Federal Ministry for Economic Cooperation and Development (BMZ) for preparing the document.

Expertise and Supervised by:

Mr. Falak Nawaz, Network of Disaster Management Practitioners (NDMP)

Conceptualized by:

Mr. Muhammad Asif, Network of Disaster Management Practitioners (NDMP)

District Focal Persons:

Mr. Safdar Ali Bughio, Additional Deputy Commissioner / DDMA Focal Person Thatta

Layout & Design:

M. Saeed (www.sarbadesign.com)

First Edition:

July 2017

This Publication is available at:

1. District Disaster Management Authority, District Administration Thatta.
2. Provincial Disaster Management Authority, Sindh
www.pdma.gos.pk



Contents

Acknowledgment	5
Message - Deputy Commissioner, District Thatta, Government of Sindh	6
Message - Assistant Director Operations, PDMA Sindh	7
Acronyms	8
Chapter 1: Need for the Development of the District Disaster Management Plan	9
Chapter 2: Profile of District Thatta	15
Chapter 3: Multi-Hazards, Vulnerability and Risk Profile of District Thatta	27
Chapter 4: Organizational Structure for the District Disaster Management Authority	41
Chapter 5: Standard Operating Procedures for Emergency Response	51
Chapter 6: Strategic Priority Areas with Proposed Interventions for Disaster Risk Management	57
Annexure	71
Annexure I: Glimpses from the inception and consultation meetings	72
Annexure II: Glimpses from the consultation meeting held with I/NGOs and CSOs	74
Annexure III: Participant list of the consultation meetings	75
Annexure IV: Glimpses from the consultation workshop	76
Annexure V: Participants list of the consultation workshop	77
Annexure VI: List of vulnerable union councils identified by the district government	78
Annexure VII: Key Stakeholders and their Role in Disaster Management	79
Annexure VIII: Selected basic definition useful in the District Disaster Management Plan	103

List of Figures

Figure 2.1: Geographical Map of District Thatta	16
Figure 2.2: Elevation Map of District Thatta	17
Figure 2.3: Average Temperature of District Thatta	18
Figure 2.4: Average precipitation of District Thatta	19
Figure 2.5: Percentage Areas of Talukas in District Thatta	21
Figure 2.6: Taluka wise Population Distribution of District Thatta	21
Figure 3.1 to 3.3: Taluka wise risk maps in District Thatta	37
Figure 4.1: DDMA Organizational Structure at District Level	44
Figure 4.2: TDMC Organizational Structure at Taluka/Town Level	46
Figure 4.3: UCDMC Organizational Structure at Union Council Level	48
Figure 4.4: VDMC Organizational Structure at Village Level	49
Figure 5.1: Emergency Response Coordination Mechanism at District Level	55

List of Table

Table 1.1: Inception meeting with different Government line departments at Thatta	12
Table 1.2: Consultative meeting with Non-government Organization and Civil Societies	13
Table 1.3: Revision Schedule of DDMP Thatta	13
Table 2.1: Average temperature and rainfall in District Thatta	18
Table 2.2: Average precipitation of District Thatta	19
Table 2.3: Population Distribution (projected 2017)	20
Table 2.4: Percentage Areas of Talukas in District Thatta	20
Table 2.5: Taluka wise Population Distribution (Projected 2017)	21
Table 2.6: Details of Taluka and Union Councils	22
Table 2.7: Sowing and Harvesting Period of Crop in District Thatta	23
Table 2.8: Mouzas Reporting Sources of Irrigation	24
Table 2.9: Details of Health Facilities in Thatta District, 2017	25

List of Table

Table 2.10: Enrollment and Educational Facilities by level and Gender	25
Table 2.11: Education Institution in District Thatta, 2017	26
Table 3.1: Disaster Risk Assessments Matrix of District Thatta	29
Table 3.2: Summary of losses and damages during 2010 and 2011 floods	30
Table 3.3: Projected Populations, 2017 of District s Thatta	33
Table 3.4: 2011 Flood Affected Population of District s Thatta	33
Table 3.5: Damages caused to housing and schools during 2011 floods in District Thatta	34
Table 3.6: Crop Loss and area damaged due to floods 2011	34
Table 3.7: List of at risk union councils identified during the consultation workshop	35
Table 3.8: List of vulnerable union councils identified by the district government	36
Table 4.1: Proposed list of members for DDMA	42
Table 4.2: Proposed list of members for TDMC	45
Table 4.3: Proposed list of members for UCDCMC	47

Acknowledgment

It is of immense pleasure to present you the District Disaster Management Plan (DDMP) which is indeed is an outcome of tireless support and efforts provided by all stakeholders for the development of the DDMP for District Thatta. This DDMP has been finalized and developed through series of consultations with DEOs of District Departments and other stakeholder's i.e. Civil Society Organizations (CSOs), I/NGOs etc. Special thanks go to the following in this regard for providing valuable input during the development of the DDMP:

S.#	Name	Designation	Department
1	Mr. Ajay Kumar Sewani	Assistant Director Operations	PDMA Sindh
2	Mr. Arshid Barqi	ADC / DDMO	ADC /DDMA (Thatta)
3	Mr. Usman Tanveer	Assistant Commissioner	A.C (Ghorabari & K.T. Bunder)
4	Mr. Fida Hussain	S.S.P Thatta	Police
5	Mr. Syed Muzaffar Jamil	Inspector	Police
6	Mr. Muhammad Essa	P.A to Chairman	Municipal Nazim, Thatta
7	Engr. Zulfiqar Ali Lashari	Sub Engineer	Taluka Municipal Administration (TMA)
8	Mr. Abdul Majeed Korai	Accounts Officer	TMA
9	Mr. Mehtab Ali Khan	Superintendent	TMA
10	Mr. Khuda Baksh	Deputy Director	Social Welfare
11	Mr. Sarfaraz	Agricultural Officer	Agriculture
12	Mr. Jan Haider	Food Controller	Food
13	Mr. Sai Baksh	Head Clerk	Food
14	Mr. Yasin Hussain Shah	Food Inspector	Food
15	Mr. Arjun	Deputy D.H.O	Health
16	Mr. Muhammad Hassan	D.D.O (Admin)	Health
17	Mr. Khalil ur Rehman	Assistant Director	Fisheries
18	Mr. Kashif Raza	Assistant Engineer	Coastal Management Authority
19	Mr. Naseer Ahmed	District Education Officer	Education
Participants list of meeting held with I/NGOs and LSOs			
20	Mr. Fayaz Hussain Shah	Program Coordinator DRR	Malteser International
21	Mr. Imran Jokhio	DRR Project Officer	Malteser International
22	Mr. Mubashir Hussain	Area Coordinator	Malteser International

The DDMA Thatta is thankful to German Federal Ministry for Economic Cooperation and Development (BMZ) for providing financial support through Malteser International under the project “Strengthening of Resilience through DRR & Livelihoods Measures in Vulnerable Coastal Communities in District Thatta, Sindh Province, Pakistan”. We are also grateful for the hard work done by the Network of Disaster Management Practitioners (NDMP), Mr. Falak Nawaz and Mr. Muhammad Asif for overall conceptualization and steering the process for development of the plan.

Mr. Mirza Nasir Ali

Deputy Commissioner, District Thatta
Government of Sindh

Message

With promulgation of the National Disaster Management Act 2010 in the country, like other districts, the Disaster Management Authority has been established in District Thatta. To fully strengthen and functionalize the DDMA and disaster management system in the district, a district level Disaster Management Plan was the need of the hour for providing strategic direction to the DDMA and other stakeholders for pooling resources and to prepare them in responding to the disaster threats.

In this regards, it is of immense pleasure to see the District Disaster Management Plan (DDMP) completed which was prepared after two and half months of thorough discussions, meetings and consultations with a number of stakeholders including federal, provincial departments, district administration, various civil society organizations and vulnerable communities. The consultations emerged as a very useful tool for exchange of ideas and experiences and finalizing the DDMP, which will be at great help to our district in building systems for mitigating disasters and dealing with their fall-out. The extensive participation of all stakeholders is well appreciated and thus makes this plan a useful document for future course of action.

I must acknowledge and appreciate the efforts of relevant departments and organizations of District Thatta, for taking the lead and provide support in organizing meetings during the development process of the DDMP.

I am very grateful to Mr. Fayyaz Hussain Shah, Program Coordinator DRR, Mubashir Hasan Area Coordinator, Mr. Imran Jokhio Project Officer-DRR and Miss. Anum Gudaro Project officer-DRR, District Thatta, and Malteser International for providing us the much needed technical support. We are thankful to Mr. Falak Nawaz, Chief Executive Office, Mr. Muhammad Asif, Program Manager DRM & CCA, NDMP for overall conceptualization and steering the process of development of the plan.

I am confident all the stakeholders of the district would follow the strategic document which will lead towards achieving the overall objective of making communities more resilient against future disasters and putting the country on the path of integrating disaster risk reduction into development plans, ensuring sustainable development.

Mr. Mirza Nasir Ali

Deputy Commissioner, District Thatta
Government of Sindh

Message

Disaster management planning at various levels is one of required and most essential document to be available with the relevant stakeholders to focus on reducing the vulnerabilities and increasing the local capacities to combat the disasters. Preparation of disaster management plan at district level is one of an important document to be prepared by the district authorities. The DDMP will provide strategic guidance to the district government authorities to streamline resources to be able to fully prepare for the disaster threats.

It is of immense pleasure that the PDMA-Sindh and District Government Thatta has taken the initiative to develop the District Disaster Management Plan July 2017 - June 2027. I hope this document will provide strategic direction and will support in fully functionalize and well equipped the District Disaster Management Authority in the district. It is most heartening to note that the DDMP has been designed after a through consultation and meeting process with participation from a wide range of stakeholders.

I am confident that DDMA Thatta and all other concerned department will take guidance from the DDMP and will have regular drills and exercises so whenever disaster strikes, the authorities are fully prepare and can respond in well-organized manner.

I congratulate Thatta District Government and District Disaster Management Authority Thatta, who dedicatedly worked hard, conduct meetings and carried out various consultations and came up with a comprehensive document. The DDMP can be considered as one of major milestone efforts in bridging the existing gaps among disaster prevention, mitigation, preparedness, response, recovery and sustainable development.

The Government of Sindh is fully committed to promote a culture of resilience, safety and security for its citizen and I am sure that this plan will contribute significantly in this noble pursuit. This may be looked at as the optimistic step towards resilience building in District Thatta.

Mr. Ajay Kumar Sewani.
Assistant Director Operations
Provincial Disaster Management Authority
Government of Sindh

Acronyms

ADC	Additional Deputy Commissioner	AC	Assistant Commissioner
BHU	Basic Health Unit	CBOs	Community Based Organizations
CHW	Community Health Worker	CSOs	Civil Societies Organizations
CBDRM	Community Based Disaster Risk Management	DC	Deputy Commissioner
DDMA	District Disaster Management Authority	DDMP	District Disaster Management Plan
DDMO	District Disaster Management Officer	DO	District Officer
DEOC	District Emergency Operation Centre	DHQ	District Health Quarter
DRM	Disaster Risk Management	DRR	Disaster Risk Reduction
EWS	Early Warning System	FCC	Flood Control Cell
FGD	Focus Group Discussion	GIS	Geographic Information System
KII	Key Informant Interview	LSO	Local Support Organization
MHVRA	Multi Hazard Vulnerability and Risk Assessment	NDMA	National Disaster Management Authority
NEOC	National Emergency Operation Centre	NGOs	Non-Government Organizations
NDMF	National Disaster Management Framework	NLC	National Logistic Cell
NDRP	National Disaster Management Response Plan	NDMP	National Disaster Management Plan
NDMA	National Disaster Management Authority	NDMP	Network of Disaster Management Practitioners
PDMA	Provincial Disaster Management Authority	PDMC	Provincial Disaster Management Commission
PWD	People With Disabilities	PHE	Public Health Engineering
PMD	Pakistan Meteorological Department	PTC	Parent Teacher Council
PRA	Participatory Rural Appraisal	PRCS	Pakistan Red Crescent Society
RHC	Rural Health Center	PEOC	Provincial Emergency Operation Centre
SSI	Semi Structured Interviews	SOPs	Standard Operating Procedures
SSP	Senior Superintendent Police	TDMP	Taluka Disaster Management Plan
TMA	Taluka Municipal Administration	TDMC	Taluka Disaster Management Committee
THQ	Taluka Health Quarter	TMO	Taluka Municipal Officer
UCDMC	Union Council Disaster Management Committee	UN	United Nation
UC	Union Council	VDMC	Village Disaster Management Committee



Chapter - 1

Need for the Development of The District Disaster Management Plan

Need for the Development of The District Disaster Management Plan

1.1. Introduction

After the promulgation of the National Disaster Management Act during 2010 in the country, all District Disaster Management Authorities (DDMAs) need to develop their District Disaster Management Plan (DDMP) which will provide guidelines for the district government for coping with disasters and emergencies in an organized manner. In this regard the first DDMP for District Thatta was developed during 2008 by the NDMA that can also be found on the PDMA Sindh website. However, the DDMP needs to be revised especially after frequent disasters happened in the district, climate change implications as well as the said district has been split now into two districts namely Sujawal and Thatta. Therefore, District Government recognized and feels an intense need of updating and revising of the DDMP for a disaster resilient District Thatta. The DDMP will help the District Government in unifying the efforts of all partners working in various sectors across the districts and will establish a clear direction and provide coordinated basis for all partners in bringing a paradigm shift in the district from a response and recovery to mitigation and preparedness approach.

1.2. Vision

The vision of the District Disaster Management Plan is, “to build the capacities and strengthen the institutional mechanism to manage the disaster risk through proactive approaches in the District”

1.3. Mission

The development of the DDMP will provide direction and guidelines to district government and other stakeholders on bringing shift in paradigm and take proactive measures to reduce the consequences of the disasters. The DDMP development is a significant footstep in the operationalization of the DDMA, to strengthen the district government by placing efforts in the setting up of disaster risk management system and provide guidance on pre-disaster preparedness, coordinated response and recovery through implementable agenda.

1.4. Objectives of the DDMP

The National Disaster Risk Management Framework 2007, National Disaster Management Act 2010, and National Disaster Risk Reduction Policy 2012 have provided a base for the establishment of policies and procedures at all levels. In line with the priority areas of the National Disaster Management Plan 2012-2022, the following objectives are set below;

- ⊙ To improve capacity of the district administration, humanitarian organization and communities, with achievable planning in order to increase disaster resilience;
- ⊙ To recognize priority disaster risk reduction measures to reduce the impact of the disasters;
- ⊙ To reinforce the coordination mechanism among stakeholders with the aim of fostering a holistic approach to the implementation of the disaster management plan;
- ⊙ To know underlying risks and develop action plans for different stakeholders to reduce disaster risk;
- ⊙ To operationalize the institutional mechanism for effective disaster management in the district;
- ⊙ To strengthen the existing emergency response mechanism and widen its scope to local disaster management committees.

1.5. Process Followed for the Development of the District Disaster Management Plan

DDMP Thatta has been revised and prepared through a consultative and participatory approach by involving all government and non-government stakeholders. Information for the DDMP were gathered at field level through a succession of in-house discussion and consultative process, including consultative meetings with district government departments, humanitarian agencies, local residents, followed by a consultation workshop at the district level for the identification and verification of hazards and prioritized the possible interventions for the coming 10 years.

Valuable suggestions/impressions were taken through direct observation, visual inspection and focus group discussion with vulnerable communities, officials and field staff. The required data were collected through primary and secondary sources by using various PRA tools including Focus Group Discussions (FGDs), Key Informant Interviews (KIIs), and Standard Questionnaire Forms were used in all meetings and workshop. Besides GIS techniques were used to prepare required maps and diagrams. As mentioned earlier that the District Government has developed DDMP for the district during 2008, which was taken as benchmark to further enhance and refine the same DDMP in the light of new demarcation of physical boundaries for Thatta District and emerging threats and hazard's risk culminating due to climate change implications and man induced hazards. The earlier DDMP has been reviewed, gaps were identified and have been addressed in the revised version of the DDMP.

1.5.1. Data collected through secondary sources

In line with the National Disaster Management Plan 2012-2022, the set priority areas along with the standard questionnaire formats were put forward for data collection in various concerned organizations through the Deputy Commissioner (DC) office. Data were collected from the following offices;

- ⊙ Website of the National Disaster Management Authority (NDMA) Islamabad;
- ⊙ Provincial Disaster Management Authority (PDMA) Sindh Province;
- ⊙ District Disaster Management Authority Thatta;
- ⊙ Website of the Pakistan Bureau of Statistics Islamabad;
- ⊙ Health Department District Thatta;
- ⊙ Agriculture & Food Department District Thatta;
- ⊙ Livestock Department District Thatta;
- ⊙ Coastal Development Authority District Thatta;
- ⊙ Education Department District Thatta;
- ⊙ Social Welfare Department District Thatta;
- ⊙ Irrigation Department District Thatta;
- ⊙ Revenue Department District Thatta;
- ⊙ Taluka Municipal Administration Thatta;

- ⊙ Police Department;
- ⊙ District Nazim/ Taluka Nazim District Thatta;
- ⊙ Malteser International;
- ⊙ DRR Forum District Thatta.

1.5.2. Data collected through primary sources

The required information and data have been collected using various PRA tools in the following meetings and workshops to orientate/consult the stakeholders. These tools include;

- ⊙ Focus Group Discussions (FDGs) in the workshops and at the community level;
- ⊙ Structured and semi structured interviews;
- ⊙ Taluka and Union Council wise hazard zonation and mapping;
- ⊙ GIS/RS techniques were used to prepare required maps and diagrams.

1.5.2.1. Inception and consultation meetings with Government line departments during 31 January-4 February 2017 at Thatta

To steer the process of the development of the DDMP, a series of inception/consultation meetings were held separately with the district line departments and other district stakeholders. The meetings were held during 31 January- 4 February 2017 to orientate the stakeholders in the consultation, planning, implementation phase of the planning, and nomination of a focal person for the future correspondence and consultation to develop DDMP Thatta. Following were the key questions asked during the meetings.

1. Nomination a focal person and contact details of a focal person for the correspondence/consultation to revised the DDMP;
2. Composition and functions of the organizations/ institutions with organogram of the organization existing at Taluka Level;
3. The role and responsibilities of the concerned organization before, during and after the disaster;
4. Physical, technical and financial resources of the organization to deal with the disasters/ emergencies;

5. Details of sectorial losses/impact on the organizations and coping strategy during major disasters (flood 2010, 2011, 2012; Cyclone 2017, 2010; or any other);
6. The level of coordination with DDMA and district authorities and with the affected communities, referring to the past major disasters;
7. The practices and suggestions of the organization to include socially excluded groups like Person with Disability (PWD) and vulnerable groups in the community etc. in DRM spectrum (Early Warning, Evacuation, Response, Relief, Rehabilitation and Reconstruction etc.)

The above questionnaires were distributed in advance from office of the Deputy Commissioner followed with personal visit to these following offices;

Table 1.1: Inception meeting held with different Government line departments at Thatta

Sr.#	Offices Name	Sr.#	Offices Name
1	Additional Deputy Commissioner Thatta	8	Education Department
2	Assistant Commissioner Ghorabari and Keti Bunder	9	Food Control Department
3	Health Department	10	Coastal Development Authority
4	Agricultural Department	11	Irrigation Department
5	Irrigation Department	12	Social Welfare Department
6	Taluka Municipal Administration Thatta	13	Revenue Department
7	Police Department	14	Fisheries Department

Meetings with district line departments were found very productive. It helped in identifying the gaps, understanding the prerequisite and explore the potential resources and dedicated partners to be required for implementation of the DDMP (Annexure I: Glimpses from the inception and consultation meetings).

1.5.2.2. Consultation workshop with district Non-Government Organizations on 03 February, 2017

A separate consultation workshop was organized with the district level International and National Level Non-Government Organizations on dated 3rd February 2017 at Malteser International Office District Thatta. 10 participants from various I/NGOs attended the workshop and gave their valuable input and suggested various interventions for the revised DDMP (Table 1.2). First the participants were briefed about the overall objectives and procedures followed for development of DDMP Thatta. Priority strategic areas were also discussed, followed by a group exercise where the participants were asked to suggest various interventions to be included in different strategic areas.(Annexure II: Glimpses from the consultation meeting held with I/NGOs and CSOs & Annexure III: Participant list of the consultation meetings).

Table 1.2: Consultative meeting with Non-Government Organization and Civil Societies

Sr.#	Offices Name	Sr.#	Offices Name
1	Malteser International	5	Bright Light
2	Pakistan Fisherfolk Forum	6	CWS
3	Plan International	7	NRSP
4	HandicapInternational	8	AHD

1.5.2.3. Consultation workshop with all Government and Non-Government Stakeholders at District Thatta on 22 March, 2017.

In order to consult the District and Talukas level stakeholders, a one-day district level consultation workshop was organized on 22nd March 2017 at Gym Khana Makli District Thatta. The aim of the workshop was to include the district stakeholders in district disaster management planning process to be followed, define the roles and responsibilities of different stakeholders in the DDMP and identify the priorities DRR interventions at district level. Extensive focus group discussions and group work were carried out to identify priority interventions for disaster risk reduction to reduce the impact of the disasters. Participants gave very valuable suggestions which were incorporated in the revised DDMP. Around 42 including 04 female participants from various Government and Non-Government Organizations including Taluka level administration and representatives of different civil societies also participated in the said workshop. (Annexure IV: Glimpses from the consultation workshop & Annexure V: Participants list of the consultation workshop).

Based on the feedback, suggestions and recommendations received during the consultation meetings and workshop, the DDMP was revised and updated with new data. The draft plan was shared with the Deputy Commissioner, DDMO and other key stakeholders and discussion continued over the key interventions specified in the document and make necessary corrections and updating.

1.6. Revision of the DDMP

Although the DDMP has been developed for 10 years effective from July 2017 till June 2027. However, as planning is dynamic process therefore, DDMP must be reviewed periodically to incorporate changes according to emerging of new eminent disasters and situations. In this regard, a review committee has been proposed under the supervision of the Deputy Commissioner who will be responsible to organize review workshop and make necessary changes according the situation. The review plan can be as follows;

Table 1.3: Reivision Schedule of the DDMP Thatta

Review Year	Review of the DDMP through workshops/internal committee
July 2019	Annual review and updating of the DDMP
July 2023	Annual review and updating of the DDMP
July 2025	Final review and way forward for next ten years



Chapter - 2

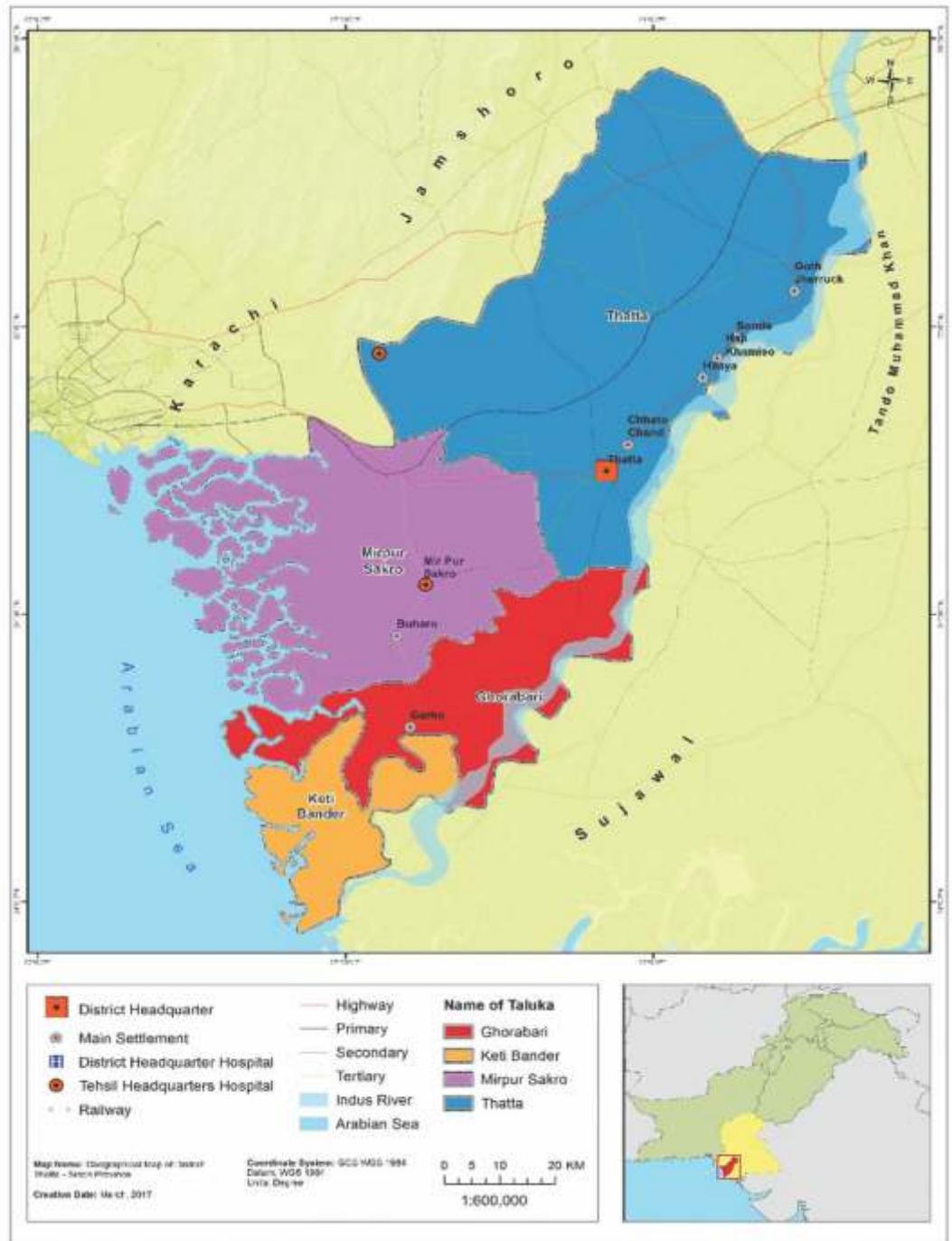
Profile of District Thatta

Profile of District Thatta

2.1. Geographical setting of District Thatta

District Thatta is situated at a distance of 98 Kilometers in east of Karachi on National Highway. It is situated at 23° 43' to 25° 26' north latitudes and 67° 05' to 68° 45' east longitudes. The district is surrounded on the north and northwest by Jamshoro district, on the east by Hyderabad, Tando Muhammad Khan, Sujawal districts and the Indus River while Indian Ocean is situated on the south of the district (Figure 2.1). The total area of the district is 8,570sq km. River Indus flows downstream the Kotri Barrage through numerous creeks till its delta in the Arabian Sea near chachdehwali Mohammad at Keti Bunder. The northern part of the district is paramount and known as "Kohistan" connected with a Kheerthar range of mountains¹.

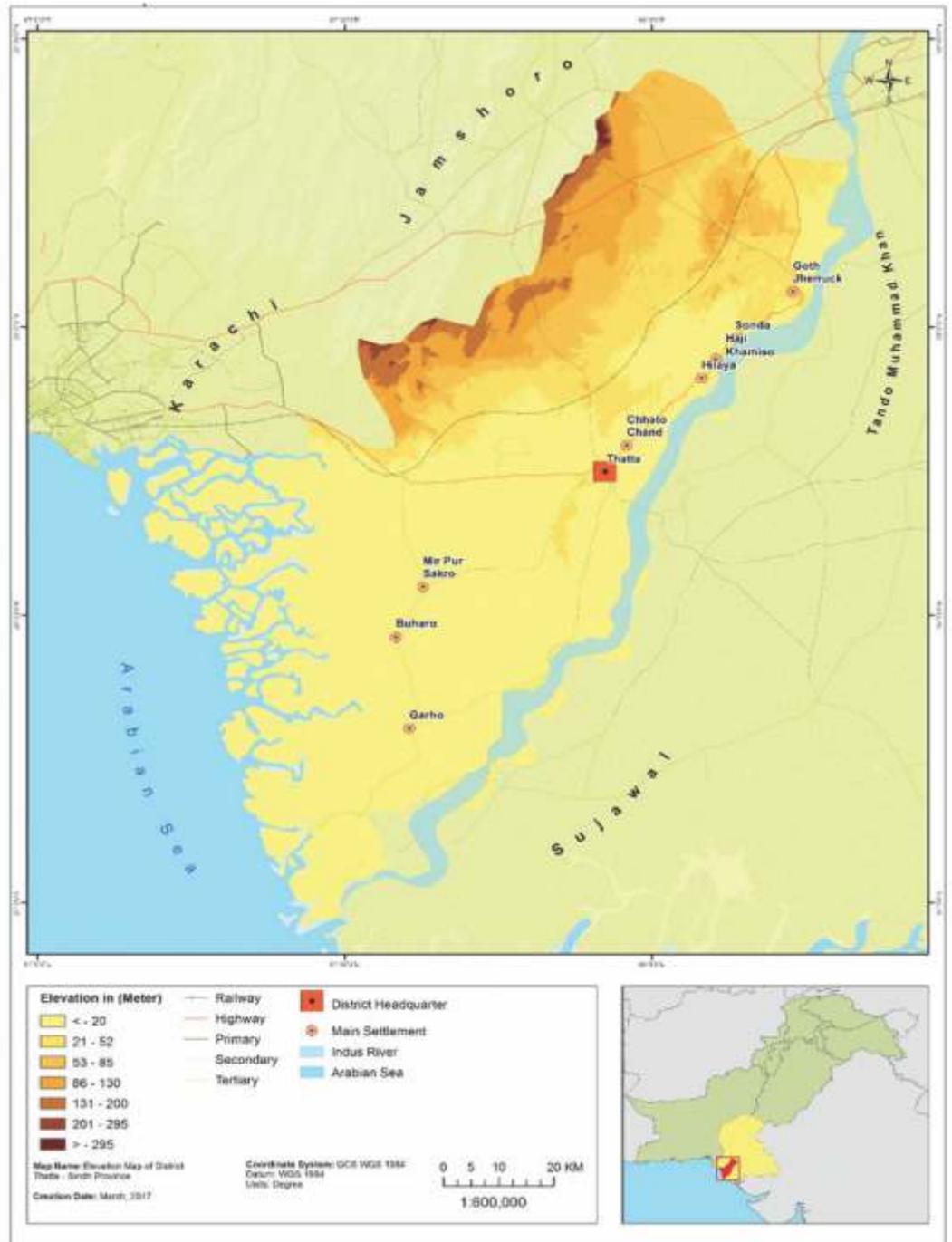
Figure 2.1: Geographical Map of District Thatta²



1. District Contingency Plan 2016
 2. Modified from NDMA and PMDA Sindh map prepared under WFP funded project on MHVRA

Before the introduction of the incumbent local government system, District Thatta was part of the Hyderabad division along with the districts of Hyderabad, Badin and Dadu. Geologically, Thatta is formed of volcanic and sedimentary rocks of quaternary and tertiary and has the same composition as that of the Indus plain and the eastern desert zone of Pakistan containing the deserts of Cholistan, Nara and Thar. The soils are silty clayey wet and saline. The natural vegetation found in the district can be divided into two categories-mangroves in the coastal or delta zone, and tropical thorns in the rest of the district. The average height of the Northern part of the district is more than 200 meter while the Southern part of the district where the height is equal to the mean sea level near Ketu Bunder is below 20m (Figure 2.2)³.

Figure 2.2: Elevation Map of District Thatta⁴



3. District Thatta Hazard, Vulnerability and Development Profile

4. Modified from NDMA and PMDA Sindh map prepared under WFP funded project on MHVRA

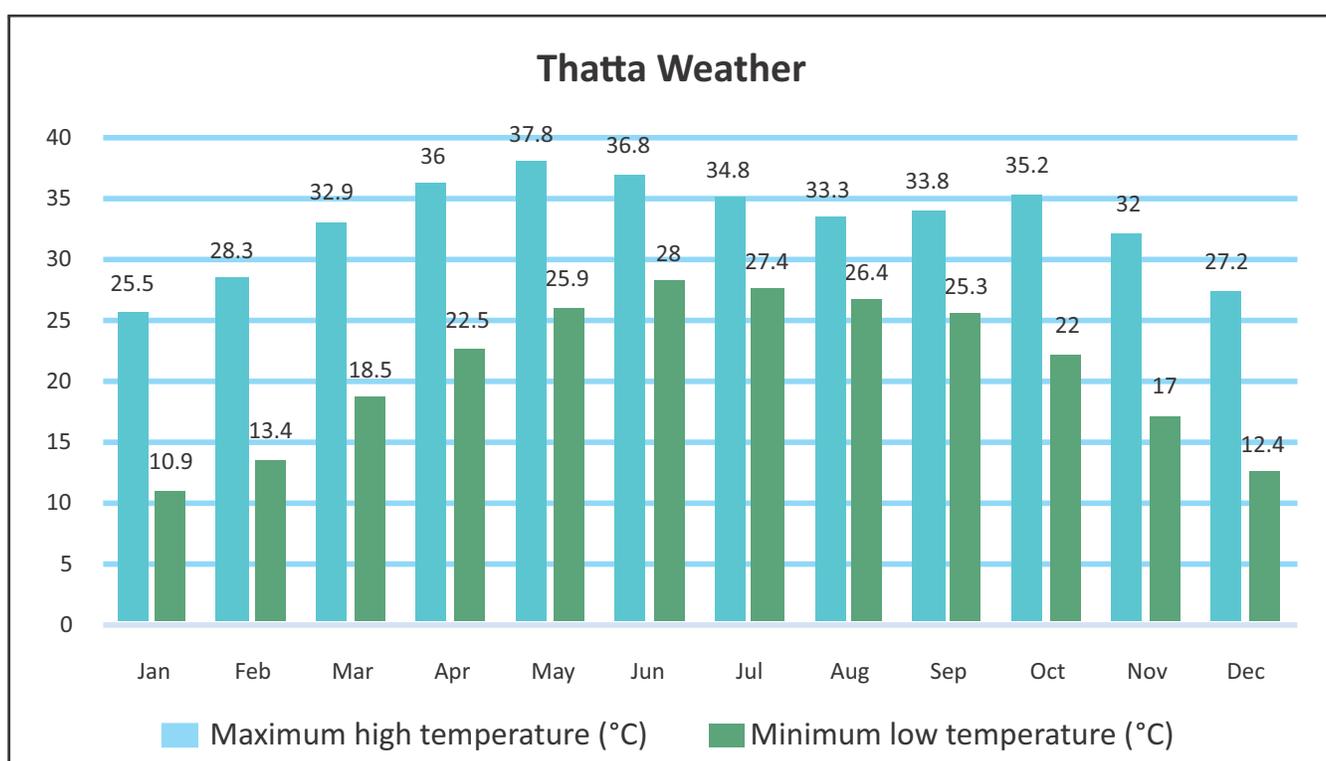
2.2. Weather and Climate

The district is enjoying moderate types of climate throughout the year. The mean maximum and minimum temperature recorded about 40°C and 25°C respectively. The sea breeze blows for eight months of the year during March to October, making the hot weather comparatively cool. As a result, there is an immediate fall in temperature. January is the coldest month. The annual average rainfall of the district is about 200 mm (Table 2.1).

Table 2.1: Average temperature and rainfall in District Thatta

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year
Maximum high temperature (°C)	25.5	28.3	32.9	36	37.8	36.8	34.8	33.3	33.8	35.2	32	27.2	29.6
Minimum low temperature (°C)	10.9	13.4	18.5	22.5	25.9	28	27.4	26.4	25.3	22	17	12.4	15.4

Figure 2.3: Average Temperature of District Thatta⁵



2.3. Rainfalls Pattern in District Thatta

The average rainfall in the district is 200mm per year. Winter rains in the district begin during December and last till the end of February. Normal rainfall takes place from mid-January to the end of February in the plains, and from the beginning of December to the end of March in the mountainous areas. Spring rains fall start during March to May, normally accompanied by the thunderstorms and with larger raindrops than those that fall during the winter.

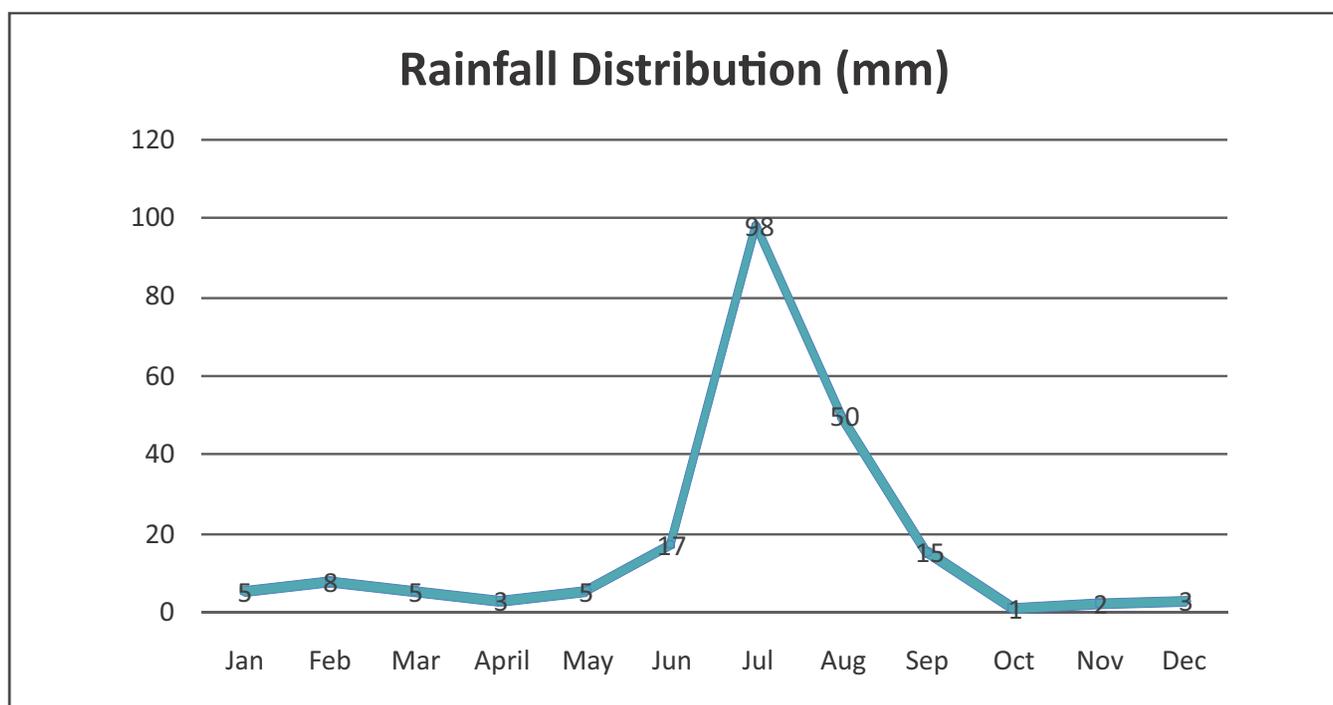
5. <https://en.climate-data.org/location/3579>

The summer rains commence after the dry month of June, lasting from July till the end of September. Precipitation in this season is irregular in nature, and is sometimes accompanied by thunderstorms and by sudden hailstorms that cause damage to lives and to property. Moreover, the recurrent flooding occurs mostly during this season. The average precipitation of district shown in table 2.2.

Table 2.2: Average Precipitation of District Thatta⁶

Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Rainfall distribution (mm)	5	8	5	3	5	17	98	50	15	1	2	3

Figure 2.4: Average Precipitation of District Thatta



2.4. The River Indus

River Indus is Pakistan's longest river and is considered as one of the longest rivers in Asia. River Indus flows on the Eastern side of the District Thatta. Taluka Thatta, Ghorabari and Keti Bunder are situated along the river Indus and that is why, some union councils of these three Talukas are very prone to flooding especially during the monsoon season. During 2010 flooding, District Thatta badly affected which cause heavy loss of life and property.

6. <https://en.wikipedia.org/wiki/Thatta#History>

2.5. Geology of District Thatta

Geologically, Thatta is formed of volcanic and sedimentary rocks of quaternary and tertiary and has the same composition as that of the Indus plain and the eastern desert zone of Pakistan containing the deserts of Cholistan, Nara and Thar. The soils are silt, clayey wet and saline. The natural vegetation found in the district can be divided into two categories-mangroves in the coastal or delta zone, and tropical thorns in the rest of the district. In terms of use, the lands in the district can be divided into five major categories; lands not available or fit for agriculture, those under arable agriculture, forests, rough grazing lands and areas under human settlements.

River Indus bisecting the district from north to southwest, Kohistan or hill zone in the north and North West, areas put under year round cultivation along river Indus through canals and tube wells, and coastal belt and delta area, are four broader topographical

divisions of Thatta. Keenjhar Lake is another important physical feature and surface water resource of the district. District Thatta possesses a diversity of environmental features and resources since it carries all the environmental features of the province. The district has desert, hills/gravel rocks, rangelands, water bodies, delta, tidal flats, creeks, lakes, mangrove and riverine forests and irrigated agricultural lands.

2.6. Demographic Profile of Thatta

District Thatta spreads over an area of 8,570 sq km with a population density of 178 persons per square kilometers. By taking the 1998 census population data as a base, the total estimated projected population in 2017 of district was 963,482 persons with the average annual growth rate of 2.6%. The urban population is projected as 149,340 (15.5%) while the rural population is 814,142 (84.5%) of the total population of the district.

Table 2.3: Population Distribution (projected 2017)⁷

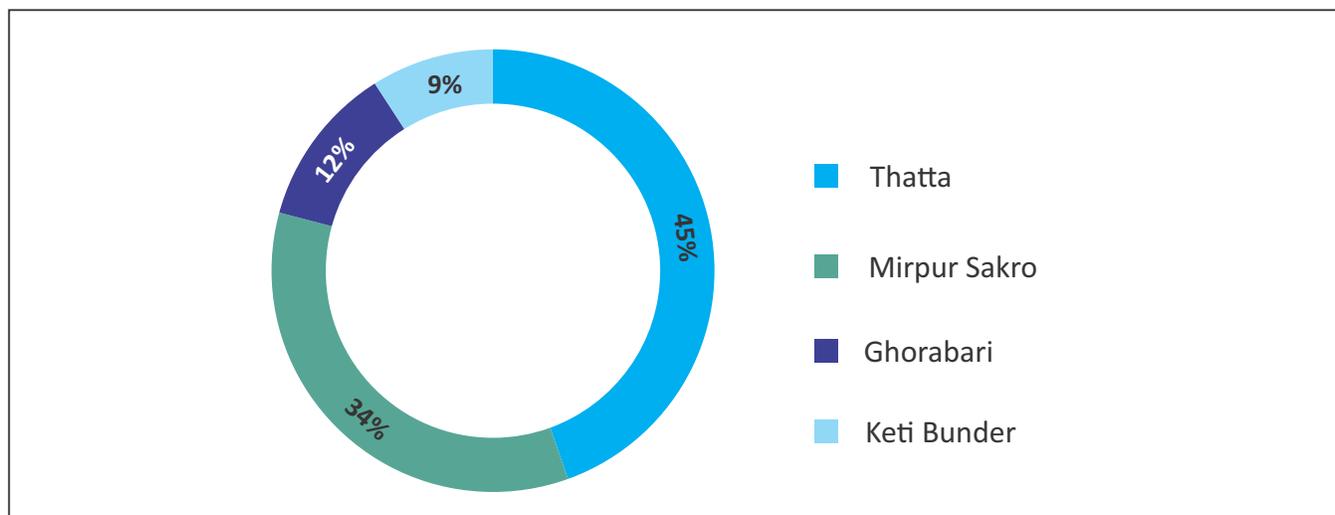
District	1981-98 Average annual growth rate (%)	Average HH size	Projected Population 2017
Thatta	2.6	6.6	963,482

Table 2.4: Percentage Areas of Talukas in District Thatta

Talukas	Area sq km	% of area of the district
1. Thatta	3,823	45
2. Mirpur Sakro	2,958	35
3. Ghorabari	1,018	12
4. Keti Bunder	771	9
Total	8,570	100%

7. District Census Report 1998, Statistics Division, Government of Pakistan, Islamabad

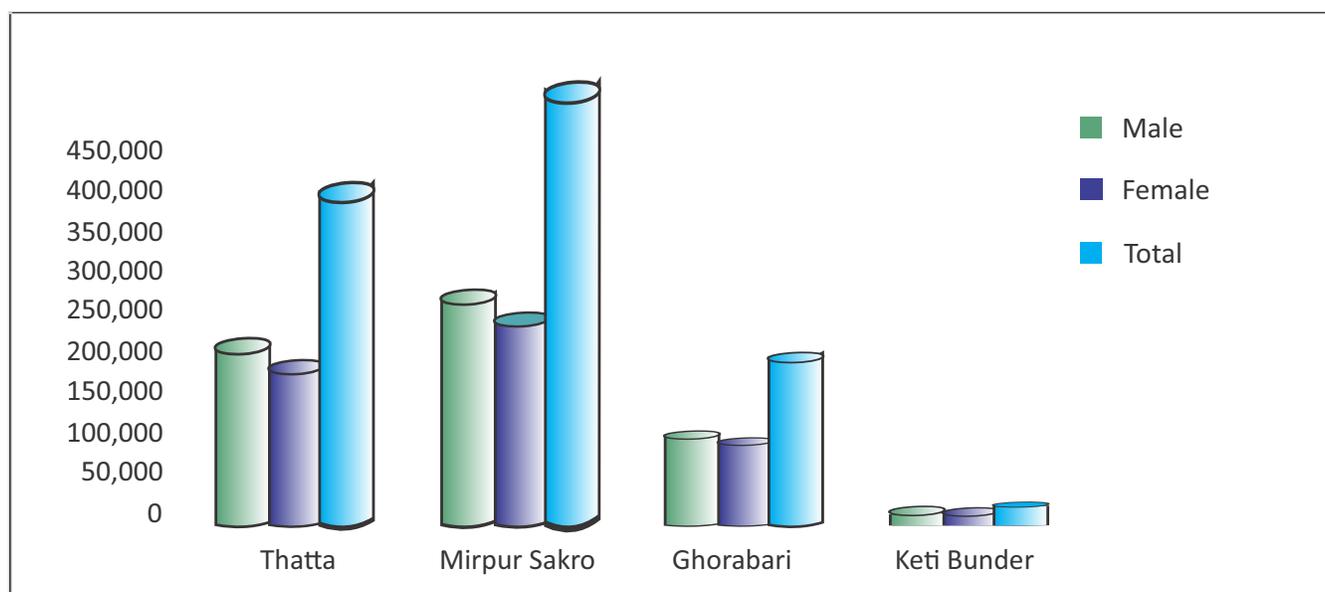
Figure 2.5: Percentage Areas of Talukas in District Thatta



The following table 2.5 shows the Taluka wise distribution of male and female population of the district.

Table 2.5: Taluka Wise Population Distribution (Projected 2017)			
Talukas	Male	Female	Total (2017)
Thatta	180,310	160,672	340,982
Mirpur Sakro	234,505	208,962	443,467
Ghorabari	88,590	78,943	167,533
Keti Bunder	6,081	5,419	11,500
Total	509,487	453,995	963,482

Figure 2.6: Taluka wise Population Distribution of District Thatta⁸



8. District Census Report of District Thatta, 1998

2.7. Governance & Administration

District Thatta is headed by the Deputy Commissioner (DC) assisting the Divisional Commissioner and is accountable to him. The DC is appointed by the provincial government from the federal or provincial civil services. The DC Coordinates with District Officers (DOs) of different sector specific offices. Administratively, the district is divided into four Talukas i.e. Thatta, Mirpur Sakro, Ghorabari, Keti Bunder. There are 39 union councils, 01 Municipal Committee and 06 Town Committees.

Table 2.6: Details of Taluka and Union Councils⁹

Name of Four Talukas	No. of Municipal Committees	No. of Town Committees	No. of UCs
Thatta	01	01	16
Mirpur Sakro	00	02	14
Ghorabari	00	03	06
Keti Bunder	00	00	03
Total	01	06	39

2.8. Economic Profile

2.8.1. Agriculture, Fisheries and Livestock

Agriculture and fisheries are the two major sources of employment for the people of district Thatta. In addition to that, there is a substantial number of landless people who own and manage livestock or are engaged in the non-farm sectors. There are two main crop seasons; "Kharif" and "Rabi" in Thatta District. The Kharif season starts from April-May and ends in October-November while the Rabi starts from November-December and ends in April-May. However, due to regional variation in temperature, several factors i.e. varieties, availability of water, soil texture etc. determine the crop pattern, sowing and harvesting time. The Crops are further categorized into major and minor crops. Wheat, Cotton, Rice, Sugarcane is the major crops of the district, while Barely, Bajra, Jowar, Maize, Gram, Rapeseed, Mustard, Sesamum, Oil seeds fall in the category of minor crops.

The total cultivated area in the district is 49%. The Wheat, Cotton, Rice, Sugar-Cane are the major crops of the district while Barely, Bajra, Jowar, Maize, Gram, Rapeseed, Mustard, Sesamum, Oil Seeds fall in the category of minor crops. Wheat is a staple food crop of the people of Thatta district and it occupies the majority of cultivated land. The Onion, Bajra, Masoor, Maize, Sesame, Gram, Jawar, Rape & Mustard and Matter are the minor crops which significantly contribute the share to the total cropped area of the district Thatta. The agriculture sector in the district is challenged with many issues. Half of the district's land are not available for cultivation and this proportion is increasing steadily over the years. The declining availability of water in Indus has serious repercussions for the Indus Delta and agriculture in the district. A large section of the population that was previously engaged in agriculture has turned to fishing nowadays. Due to sea intrusion, the growers are sprouting betel leaf crops to make ends meet as needs less water and yields more profit. The degradation of Indus delta and grazing lands has also resulted in the decline of livestock population¹⁰.

9. Data from Deputy Commissioner Office, District Thatta.

10. Local Adaptation Plan of Action District Thatta

Most of the farmers have traditionally kept cattle, buffaloes, sheep, camel and goats. A substantial growth on livestock products viz-a-viz milk, meat, beef, mutton, poultry and eggs have been noticed for many years. The people keep buffaloes, cows, donkeys, sheep, goats, camels and horses. The best breed of buffalo and cow are found in the district. Sheep, goat, camel, horse, ass and mule are also the main livestock of the district. The numbers of large animals exceed the number of smaller animals showing people's preferences for keeping cattle rather than goats or sheep. Livestock in the district suffers in particular from shortage of high quality feed and fodder crops as a result of the overall shortage of water.

Table 2.7: Sowing and Harvesting Period of Crop in District Thatta

Sr.#	Name of District	Sowing Period	Harvesting Period
1.	Rice	15 April - 15 May	September - October
2.	Cotton	15 March- 15 April	15 September – 31 October
3.	Sugarcane	February – March (Spring) August - September (Autumn)	December - February
4.	Wheat	1 November - 20 th November	Full month of March
5.	Sunflower	August - February	When back of head turns yellow, harvesting should be done
6.	Soybean	15 October-15 November	When all the pods of crop turn yellow in color, which is the best time of harvesting.

2.8.2. Industry

From the industrial point of view Thatta district has progressed considerably. There are about 30 industrial units established in the district. Apart from the sugar mill, all the larger industrial units are located in Dhabeji and Gharo adjacent to Karachi. Most of the labour in these units are generally non-local and commutes from Karachi. These include sugar mills (5), textile mills (9), paper mills (2), flour mill (3) salt works, ice factory (2), etc. In addition, stone from the Makli Hills and Kohistan is supplied to the Pakistan Steel Mill and the Thatta Cement Factory. There are also large coal deposits in Thatta. Recent additions to the industrial units are the car manufacturing plant near Budho Talpur, belonging to the Deevan Group adjacent to the Deevan Sugar Mills. The group also employs non-locals in large numbers¹¹.

Due to its strategic location near the Industrial city of Karachi, the industrial sector flourishes very well. It is primarily done from the Arabian Sea, Keenjhar Lake and River Indus, small lakes, water channels and fish

farms. There are Shrimp farms in coastal areas as well. Fishing is the key source of livelihood for these coastal communities. While not all families own boats, the people get together in small groups of 5 to 10 and use the boat that belongs to one of them or to a local Seth.

2.9. Physical and Social Infrastructure

2.9.1. Road Network Infrastructure

Thatta city is situated on the national highway (N5) at a distance of 98 kilometers from Karachi. National highway length is District Thatta 112 kilometers. Super Highway (M9), which connects Karachi and Hyderabad, also passes through this district for a length of 40 kilometers. District headquarters of Thatta is connected with other Talukas through well-built roads. Although these roads are single, but are of good quality. Recently Government has started to construct super highway between Karachi-Thatta, due to which the transportation between these two cities will be very frequent and cost effective.

11. Socio-economic Study Badin and Thatta Districts, Sindh, Pakistan

2.9.2. Irrigation System

The hilly areas of the district are cultivated on monsoon water and wells, while the canals and channels irrigate the other lands. The areas within the protective banks of the Indus used to have fertile patches of land which depended upon the flood and lift water system from barrage channels at various places for irrigation purposes. However, the pattern of irrigation has been transformed in the district due to lack of water availability. District Thatta is irrigated, mainly, by the Indus River and canals. The following table shows that, among the rural mouzas, 86 (41%) mouzas are irrigated from the river and 52 (25%) are irrigated through canals. In the year 2014-15, 82% of the total sown area was irrigated and from this irrigated area 100% area was irrigated through canals and tube wells. From 2014-15 to 2015-16, there is a 21% decrease in the total irrigated area with a 22% decrease in canal irrigated area¹².

Table 2.8: Mouzas Reporting Sources of Irrigation¹³

Administrative Unit	Rural Populate Mouzas	Numbers of Mouzas Reporting Source of Irrigation							
		Canal	River	Tubewell	Ravi	Spring/Stream /Karez	Arid (Barani)	Flooding/Torrent	
Thatta District	211	205	86	52	1	-	6	1	0
	100	90	19	29			1	1	
Thatta Taluka	52	48	1	22	-	-	4	-	-
	100	92	2	42			8		
Mirpur Sakro Taluka	86	84	85	10	1	-	2	1	-
	100	98	99	12	1		2	1	
Keti Bunder Taluka	15	15	-	10	-	-	-	-	-
	100	100		67					
Ghorabari Taluka	58	58	-	10	-	-	-	-	-
	100	100		17					

2.9.3. Health facilities

The health infrastructure in District Thatta is scant. There are only 41 health facilities in the district. The BHUs and dispensaries are also in small numbers. It is estimated that there is one dispensary with one compound for about 5,000 people in the coastal Talukas. A particular problem of access to health services is the scattered nature of the population. Thus, many of the people have no access to health services within a convenient location from their homes. This has left room for a lot of untrained people posing as health care providers who establish camps and delivery an uncertain quality of diagnostic and prescribe medicines.

The health care coverage of the district shows a big gap between service providers and population they supposed to serve. On the face of the rapid population growth, 963,482 heads per 2017 projection the district has only 1 District Health Quarter (DHQ) hospital, 1 Taluka Health Quarter (THQ) hospitals, 6 Rural Health Centers (RHC), 09 Government Dispensaries (GD) and 21 Basic Health Units (BHU). The following table 2.9 describes the existing health facilities in District Thatta.

12. Pakistan Emergency Situation Analysis District Thatta 2014

13. Mouza Statistics of Sindh 2008, Agriculture Census Organization

Table 2.9: Details of Health Facilities in Thatta District, 2017

Health Facilities	Taluka Thatta	Taluka Mirpur Sakro	Taluka Ghorabari	Taluka Ketu Bunder	District Thatta
DHQ	1	0	0	0	1
THQs	0	1	0	0	1
RHCs	2	1	1	2	6
BHUs	7	9	5	0	21
GDs	7	0	2	0	9
Others	3	0	0	0	3
Total	20	11	8	2	41

2.9.4. Education facilities

The educational status is quite poor in District Thatta. The overall literacy rate (for the population of 10 years and above) is 36% with males 48% and females 23% respectively. For the urban and rural comparison, urban literacy rate is higher than the rural, which is 60% (male: 72 % and female: 45%). Table 2.10 shows details of gross and net enrolment rates by rural, urban and gender at different levels.

Table 2.10: Enrollment and Educational Facilities by level and Gender¹⁴

Urban/ Rural/ District	Gender	Gross Enrolment Rates			Net Enrolment Rates		
		Primary Group (5-9)	Middle	Matric	Primary	Middle	Matric
			Group (10-12)	Group (13-14)	Group (5-9)	Group (10-12)	Group (13-14)
Urban	Male	89%	44%	75%	49%	20%	14%
	Female	85%	49%	4%	55%	19%	14%
	Total	87%	46%	6%	52%	19%	14%
Rural	Male	63%	21%	2%	34%	4%	2%
	Female	38%	14%	1%	21%	4%	2%
	Total	53%	18%	2%	29%	4%	2%
Total	Male	65%	24%	3%	35%	6%	3%
	Female	46%	18%	1%	27%	6%	4%
	Total	57%	21%	25%	32%	6%	3%

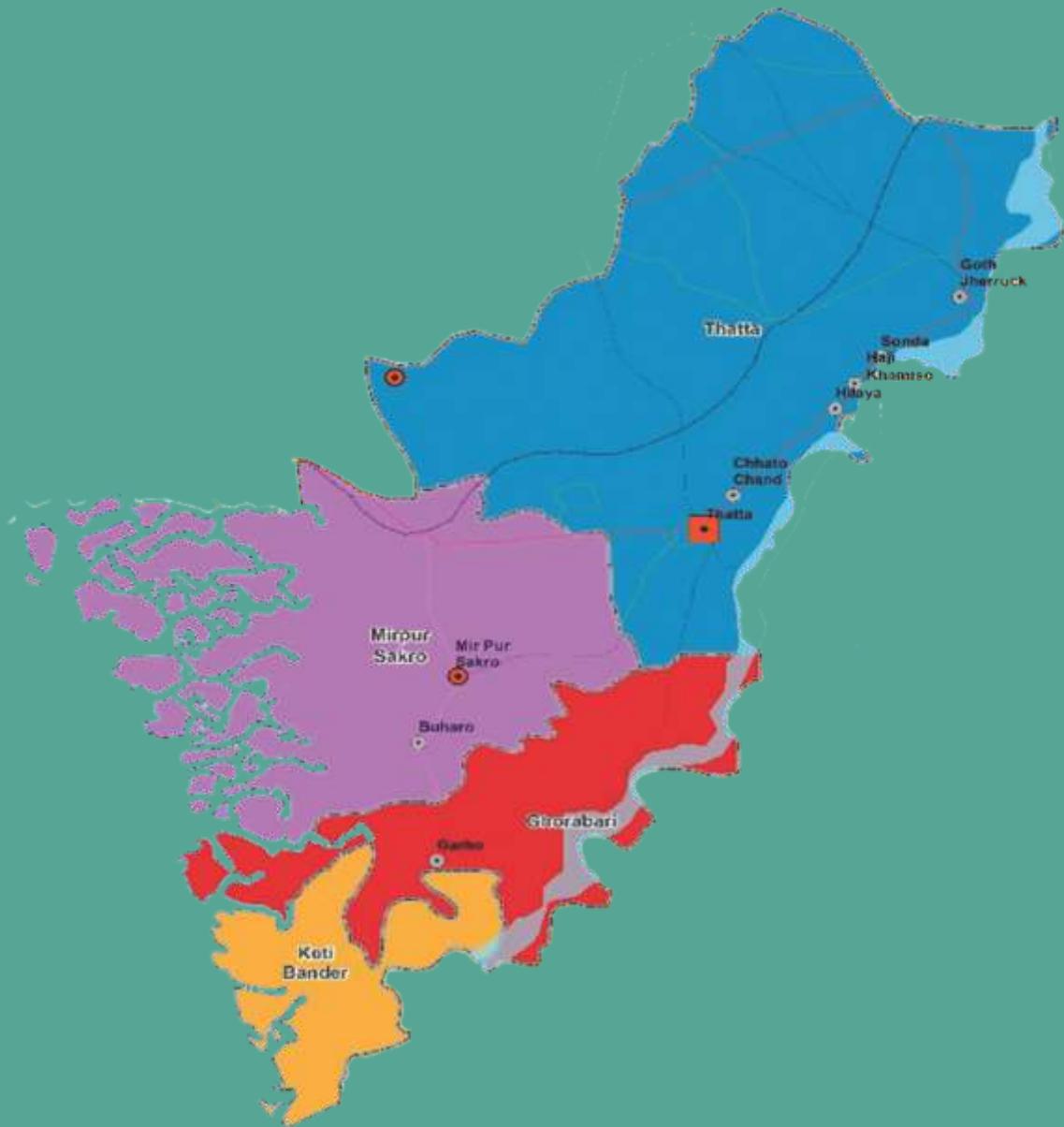
14. Pakistan Social and Living Standard Measurement Survey 2012-13

The total enrollment of students in government schools of District Thatta is 165,889 (Male: 97,126 and Female: 68,763). Out of a total of 5,527 teachers, 4,547 are male and 980 are female teachers. This illustrates that one teacher is teaching average 30 students. The total boys' schools of District Thatta are 1,314, and the total female schools are 433. Besides, there are 1,470 mixed gender schools. Thus, the total number of schools is 3,217 and average every school has an enrollment of 52 students and a teaching staff of around 2.

Table 2.11: Educational Institution in District Thatta, 2017

S. No.	Level	Male	Female	Total
1	Secondary	27	13	40
2	Higher Secondary	5	0	5
Grand Total:		32	13	45





Chapter - 3

Multi-Hazards, Vulnerability and Risk Profile of District Thatta

Multi-Hazards, Vulnerability and Risk Profile of District Thatta

3.1. Background

District Thatta is vulnerable to various natural and human induced hazards including floods, cyclones, droughts, sea intrusions, deforestation of mangroves, water logging and salinities and earthquakes as natural hazards, while fires, civil unrests, road accidents and health epidemics are prominent human induced hazards. Besides, poor communication infrastructure, lack of health facilities, low literacy ratio and poverty especially in the remote coastal villages makes the area very vulnerable to various hazards.

For framing of disaster management planning, Multi-Hazard Vulnerability and Risk Assessment (MHVRA) plays a significant role in understanding the hazards, vulnerabilities and risks of the communities. MHVRA provides a base line in identifying and prioritizing various DRR interventions for specific Talukas and Union Councils. In other words, MHVRA acts as planning tools for all development practitioners and district government to avoid areas which are prone to various hazards but if it really necessary to have a development activity in disaster prone areas, then the interventions should be constructed according to building codes and further such measures should be taken where lives and properties are less harmed by the consequences of the disasters.

MHVRA can be conducted by using numerous traditional tools like Participatory Rural Appraisal (PRA), scientific and technical tools like Geographical Information System and Remote Sensing etc. For conducting MHVRA, there is need for reviewing of previous and current studies and activities related to hazards in the form of hydrological, meteorological, and geological phenomena. Besides, it also includes a review of past disaster's impacts on the District's population, crops, infrastructure etc., level of exposure

against various hydro-meteorological and geological processes that appeal disasters.

For assessing the multi-hazards, vulnerabilities and risk of District Thatta, different sources like district disaster management plan of 2008, contingency plan of 2016 were taken as baseline to derive information about hazards, vulnerabilities and risk of the Talukas and Union Councils. Besides, a study on MHVRA for District Thatta has been conducted by the NDMA and PDMA Sindh with funding support of World Food Programme through Asian Disaster Preparedness Center Thailand and Network of Disaster Management Practitioners during 2014-15, which were used for deriving information about multi-hazard, vulnerabilities and risks of the District. Apart from the above secondary sources, primary data were used by widespread consultation process with key government and non-government stakeholders through consultation meetings and workshop which helps in prioritizing the Talukas and Union Councils at risks.

3.2. Hazard Profile of the District

Flooding has been reported as the most frequent and damaging natural hazard in the district which occurs at regular intervals during the monsoon seasons. In addition, other potential hazards are hail storm, earthquakes, epidemics, water logging and salinity and conflict are also reported time to time. District Thatta is geographically divided into three zones; zone 1: Coastal Belt i.e. Taluka, MP Sakro, KT Bunder and Ghorabari; Zone 2: Non Coastal belt i.e. Taluka Thatta; Zone 3: Riverine belt i.e. whole district(table 3.1).

Table. 3.1: Disaster Risk Assessments Matrix of District Thatta¹⁵

Disaster	Frequency	Potential scale	Z1	Z2	Z3	Potential immediate affects
Floods	1840, 1856, 1874, 1942, 1946, 1948, 1956, 1973, 1974, 1976, 1978, 1978, 1988, 1989, 1992, 1994, 1995, 1996, 1999, 2003, 2006, 2007, 2010, 2011.	It is during the monsoon season that Floods occur (June to September) and in case of canal breaches which is a usual phenomenon. Impacts are often local but can be devastating in the case of breaches in Flood protection bond, Drains or river Indus and strong effect if combined with a cyclone.	H	H	H	Life and livestock loss, IDPs, WASH systems collapse, livelihood resources either damaged or destroyed, infrastructure damaged or destroyed, stress among women, children, old and disable persons increases, permanent land degradation and erosion possible, permanent loss of shelter/houses, eruption of human and livestock epidemics, school drop outs.
Heavy Hill Torrents	2013		H	Nil	-	
Cyclone	1964, 1993, 1999, 2003, 2004, 2007.	The impact may be higher, but restricted to low-lying areas The areas with dense population will be the worst affected.	H	Nil	-	In case of no or late early warning, there may be a great loss of life, fear, epidemics, IDPs, WASH systems collapse, livelihood resources either damaged or destroyed, infrastructure damaged or destroyed, stress among women, children, old and disable persons increases, land may be permanently or temporarily degraded, permanent or temporary loss of shelter/houses, depletion and/or changing of quality of underground water aquifers, no place for shelter - every place is wet. Major breaches occur in irrigation system (kilometers of canals gone), sea-intrusion, school drop out.
Cyclone Nanuk	2014	High tide of 4.5 ft.	H	Nil	-	
Sea Intrusion	1992 onward	Large scale area affected, occurs continuously.	H	Nil	-	1.22 million acres land either eroded or subsequently submerged under the sea, livelihood options of thousands of people destroyed, mass displacement, structural damages, and vast area under desertification.
Tsunami	1945	Small to large scale tsunami affecting the larger coastal area.	H	Nil	-	Being a coastal district, threat of tsunami has been always present as major a fault line crossing from Makran coast of Bay of Bengal poses threat to Thatta coast too.

15. District Contingency Plan 2016

3.2.1. Prevailing major hazards

3.2.1.1. Flooding

Like other part of the country, the monsoon season which brings major proportion of rainfall starts from June and lasts till September in the district. During the recent years, the behaviors and distribution of rainfall has been observed very abnormal mainly due to the impacts of climatic changes where the district receives heavy rainfall in the form of erratic and cloud burst especially during different time period of the monsoon season. These types of rainfall generate flash floods and witnesses of heavy loss of life and property in the district. The history shows that District Thatta was hit by various episodes of flooding during the recent past. Table 3.2 shows that the district was badly hit by the 2010 and 2011 severe flooding.

Table. 3.2: Summary of losses and damages during 2010 and 2011 floods¹⁶

Attribute	2010	2011	Source
Total households		285,678	Estimated
Affected Households	175,569	34,904	Contingency Plan 2012
Total UCs		55	
UC Affected	55	23	UN-OCHA
Total Villages		7,200	
Villages/Settlements Affected	977	901	Contingency Plan 2012
Total Houses Affected	107,981	15,693	Contingency Plan 2012
Katcha	77,396	n/a	PDMA Sindh
Pakka	30,585	n/a	
Partially Damaged		15,693	
Destroyed		0	
Total Population		1,456,955	Estimated
Affected Population	895,400	178,011	
Deaths	7	23	
Injuries	0	15	
Total Area		1,778,043	UN-OCHA
Total Affected Area	874030	198,111	PDMA Sindh, UN-OCHA,
Crop Area Affected	177,800	108,303	FAO

3.2.1.2. Tropical Cyclone

Six coastal districts including Karachi, Thatta and Badin from Sindh Province and Lasbela, Gwadar and Ketch from Baluchistan Province are highly vulnerable to cyclone hazard. Due to its geographical setting, District Thatta is among district badly affected by the surge of cyclone on several occasions. Tropical cyclones not only wipe out the human settlements and huge losses of human and animal lives, but it also destroys and badly damaging the fishing boats and fish harbors, thus resulting badly affect the livelihood of the majority of fisher communities of the district. Historically, the tropical cyclones formed over the Arabian Sea and making landfall at the coastal areas of Sindh and Baluchistan including District Thatta.

16. Pakistan Emergency Situation Analysis, District Thatta 2014

It has been observed that Tropical Cyclones now frequently developing in the Arabian Sea and their severity become frequent and abnormal mainly due to global warming and climate changes phenomenon. Some of the major tropical cyclones hit the coastal areas occurred during May 1902, June 1926, June 1964, November 1993, June 1998, May 1999, June 2007 and 2011 and June 2014. The Cyclone Yemen in 1999 hit three coastal districts of Sindh, where 244 loss of life, 40177 animals perished, villages affects population affected 0.5 million was reported. Damaged infrastructure was 45 PHED facilities, 16 Health facilities, 334 educational institutions and 208 km of roads.

Keti Bunder town in District Thatta wiped out by tropical cyclone four times in the recent history. The cyclones of 2010 (PHET) and 2011 (KIELA) also occurred during the recent years, out of which PHET caused significant damages in District Thatta. Cyclone Nanauk was recent phenomena, which hit the coastal areas of Oman by June 15, 2014 but caused intermittent rainfall, together with gusty-winds in coastal areas of Sujawal, Thatta and created panic amongst dwellers.

3.2.1.3. Sea Intrusion

Sea intrusion results as consequences of the scarcity of fresh water in downstream Kotri. It was the river Indus and its delta that was considered as sources of prosperity for the local residents and there was a time that District Thatta was considered as one of the most prosperous areas of the subcontinent. With the start of efforts to contain river Indus and manage its waters upstream through the construction of engineering marvels like dams, barrages and link canals, flow of Indus water started receding downstream Kotri barrage. This reduced inflow of fresh water in River Indus resulted sea intrusion that have resulted in the degradation of Indus delta and it is estimated that the delta has shrunk to 10% of the size it used to have. Most of the Thatta's lands along the costal belt have been encroached by the sea. The sea intrusion has also severely affected the aquifers and at many places in the district, the underground water and lands have become saline.

Mangroves plantation works as blanket cover to prevent the sea intrusion. But unfortunately, the

destruction of mangroves owing to deforestation and reduce the flow of water in River Indus has resulted in affecting the reproduction of fish and thus causing reduction in the availability of fish especially to the poor fishermen. The Federal Flood Commission (FFC) has conducted a study of sea intrusion spread over 150 kilometers of the District Thatta and Badin. The study reveals of rising in sea level caused flooding in the coastal areas of Thatta. In other study conducted by the Pakistan Meteorological Office indicates sea water flooding in the coastal areas of Sindh. As a result of which panic have been created among the residents of Thatta and Keti Bunder, and in the villages located in the coastal belt of District Thatta.

3.2.1.4. Tsunami

Due to its geographical location, District Thatta can be affected by the tsunami disaster also. A tsunami disaster hit the Makran coast in Balochistan Province during November 1945. The Tsunami resulted a sea waves of 12-15 meters height that killed about 4,000 people in the Makran coast. Although Karachi and Thatta were away from the epicenter, but still 6 feet high sea waves were observed which affected harbor facilities. The effects of the Tsunami of December, 2004 were also felt along the coastline of Pakistan. The abnormal rise in water detected by tide gauge station in Keti Bunder area of District Thatta created panic in the coastal population including Karachi.

3.2.1.5. Drought

Being part of the dry region, District Thatta always faces the risk of droughts. The Kohistan and desert zone of the district are especially vulnerable to drought hazard as the areas face extreme shortage of potable water. Geography, District Thatta can be divided into four zones, namely eastern desert, western hilly / mountainous area, a 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 during the month of December and January. The arid area people depend upon the scanty rainfall raising livestock and millet crops. The failure of rainfall and impacts of climate changes, reduce the water supplies in the Indus River System (IRS). Sindh is at the end of the system usually takes the brink. Besides, two-third of ground water is brackish and 80% agricultural land is affected by water

logging and salinity. Historically, Sindh Province 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 badly affected. The ground water depleted between 30 to 40 feet, and the quality of life became very fragile. As a result of malnutrition, spread of diseases erupted. The cultivated area reduced in 1998 from 3.415 million acres to 2.611 million acres. The most affected was wheat area 22% and rice almost 35%. Besides, cultivated area grew poor crops, which created food scarcity all over Sindh, except for a couple of districts. There was tremendous drop out (about 27%) in schools, due to drought situation¹⁷.

Drought spell occurred during 2012 also which was becoming more severe, but fortunately the late monsoon rains saved the area from devastation, even than about 15% population of Thar moved to barrage command area with their livestock in search of livelihood. The uncertain situation during monsoon 2013 due to untimely rains affected the crop sowing in Thar and Kohistan, which results sufferings of human and animal population.

3.2.1.6. Earthquake

Although District Thatta falls away from the fault line and is unlikely to be affected by a massive earthquake. There is no recorded historical data available of the damages in the district due to previous earthquakes prior to 2005. However, October 2005 earthquake caused minor damages in the district. Some of prominent faults situated in the coastal zones are (a). Karachi-Jati, (b). Surjan-Jhimpir, (c). Pab Fault (d). Hub Fault and (e). Allah Bund-Rann of Kutch faults. Over the last sixty years, earthquakes of intensity lower than 5 on Richter Scale, including those in 1945 and 1985, have struck the region comprising the macro-environment and thus far they have been of minor significance¹⁸.

3.2.1.7. Water logging and salinity

The high tidal activity and sea intrusion have increased the water logging issue, especially in the delta zone. The plane lands and soil cause water logging along the river beds. In addition, the soils condition in Thatta are mostly saline in nature, while the sea intrusion has further exacerbated the salinity problem in the district. Seepage from the unlined earthen canal system, inadequate provision of surface and subsurface drainage, poor water management practices, insufficient water supplies and use of poor quality groundwater for irrigation also directly related to water logging problem. Salinity is another major problem in irrigated areas. People living at the tail end of canal irrigated areas also use ground water by digging tube wells. These tube wells also carry salinity and alkalinity because of high sulphate contents. These tube wells pump brackish water that results into salinity.

3.2.1.8. Hailstorm

District Thatta is also prone to hailstorms which leave great impact particularly on agriculture practices of the district. During the monsoon season, the cropped land is threaded under the hailstorm along with heavy rainfall and high velocity of wind cause destruction of the seasonal crops and cash crops. Every year severe damages caused to the crops and fruits in particular resulting in huge losses to the farmers and fruit growers by the hailstorm.

3.3. Exposure and Vulnerability Profile of the District

Vulnerabilities of District Thatta especially along the coastal areas are caused due to its geographical location, poor communication infrastructure, poverty, low literacy ratio and shift of livelihood to other means of sources. It is of utmost importance for assessing the exposure and vulnerabilities level of physical, social, economic and environmental assets of the district.

17. SIRAT Hazard, Vulnerability Capacity Assessment (HCVA) Thatta 2014

18. Environmental & Social Baseline of Coastal Region of Thatta District Part – 1: Dhabeji – Gharo – RannPethani Ecosystem

In this study, four important elements at risk are considered for vulnerability profiling;

- ⊙ Population
- ⊙ Buildings
- ⊙ Crops
- ⊙ Essential facilities

3.3.1. Population exposure

According to the 1998 census of Pakistan, the total population of District was 963,482 persons with the average annual growth rate of 2.6%. The urban population of the district was 149,340 (15.5%) while the rural population was 814,142 (84.5%). The projected population during 2016 is 963,482¹⁹.

Table 3.3: Projected Populations, 2017 of District Thatta²⁰

District	1981-98 average annual growth rate (%)	Average household size	Projected population 2017
Thatta	2.6	6.6	963,482

Table 3.4: 2011 Flood Affected Population of Districts Thatta²¹

District Thatta	Affected population	Area affected (acres)	UC's affected
Total	178,011	225,738	23

The vulnerability of the district with respect to the flood hazard can be measured from the 2011 flood statistics, which shows that out of 55 union councils, 23 union councils were severely affected. In those 23 UC's, a total of 178,011 populations were badly affected. Besides, 64,293 acres of crop lands were damaged and 15,693 houses were damaged. Besides, 172 schools were damaged in the same flooding.

3.3.2. Buildings exposure

Although, District Thatta is not on the fault line and is unlikely to be affected by severe earthquake, but the existing weak buildings infrastructure cannot absorb the even moderate shocks of earthquake or floods. In assessing the natural hazard's risk to housing units, the structural condition of units had to be collected; only the grouping of housing units into broad categories with available information was considered. The housing census of Pakistan done during 1998 and the projected estimates provided details units found in an area. Three categories of buildings are very common including Katcha (bad condition), Semi Pacca (moderately good condition) Pacca (sound condition). The statistic 2011 floods show that 15,693 houses and 172 schools were damaged in 2011 floods its details are given below in table 3.5.

19. District Census Report 1998, Population Census Organization, Statistics Division, Government of Pakistan, Islamabad

20. District Census Report 1998, Statistics Division, Government of Pakistan, Islamabad

21. District Thatta Contingency Plan 2016

Table 3.5: Damages caused to housing and schools during 2011 floods in District Thatta²²

District Thatta	Affected population	Area affected (acres)	UC's affected	Houses damaged	Schools damaged
Total	178,011	225,738	23	15,693	172

3.3.3. Crops exposure

Total cultivated area in the district is 49% of the total land. The agriculture sector in the district is challenged with many issues. Half of the district's land is not available for cultivation and this proportion is increasing steadily over the years. Agriculture is considered the main source of livelihood for the population of Thatta. The geographic location and climatic conditions make the agriculture production more vulnerable. The devastating floods have inflicted huge losses on agriculture sector in crops, livestock and irrigation system. According to the floods 2011 data, around 64,293 acres of standing crops were washed away as well as agriculture land filled with the excessive accumulation of mud and water, vanishing the source of livelihood for a large number of displaced families. The declining availability of water in River Indus has serious repercussions for the Indus Delta and agriculture in the district. A large section of the population that was previously engaged in agriculture has turned to fishing sector. Due to sea intrusion, the growers are sprouting betel leaf crops to make ends meet as needs less water and yields more profit. The degradation of Indus delta and grazing lands has also resulted in the decline of livestock population.

During the assessment of vulnerabilities of crops, the hazards like floods, droughts, cyclone, hail storms and water logging and salinity are considered the most damaging phenomena to the crops in the area. The impact was assessed during the consultation meeting against the major wheat, vegetables, grains, fruits, fodder and other crops. Besides, sources of livelihood were severely affected due floods 2011 as the damages to demographic indicators, agriculture and livestock were enormous²³.

Table 3.6: Crop loss and area damaged due to 2011 floods²⁴

	Major Crops	Area
Cotton	Area sown (Acre)	24,075
	Area Damaged (Acre)	20,223
	%	84%
Rice	Area sown (Acre)	169,511
	Area Damaged (Acre)	110,182
	%	65%
Sugarcane	Area sown (Acre)	32,508
	Area Damaged (Acre)	8,452
	%	26%
Other	Area sown (Acre)	33,247
	Area Damaged (Acre)	26,032
	%	78%
Total Area Sown		259,341
Total Area Damaged		164,889

22. District Government Flood Damages Data

23. Flood Situation Update, 2011, Food & Agriculture Organization (FAO)

24. Flood Situation Update, 2011, Food & Agriculture Organization (FAO)

3.3.4. Essential facilities

District Thatta susceptibility can be evidently recognize from its critical facilities which were exposed to the 2011 devastating floods. The essential facilities include transportation, electricity, water and sanitation, communication channels, academic institution, health, police and public administration services were badly halted due to flooding and standing water. During 2010 flooding; 32 BHUs, 13 Dispensaries, 4 RHCs and 2 SHCs were severely damaged while during 2011 flooding, 13 BHUs out of the 47 BHUs were reportedly damaged. Out of the 8 RHCs, 2 were reported damaged. Likewise, due to the 2010 floods, 696 schools (Boys: 406, Girls: 66, Mixed: 224) were affected. During 2011's heavy rains 172

(Boys: 138, Girls: 34) schools were affected, of which 44 (Boys: 32, Girls: 12) were completely destroyed and 128 (Boys: 106, Girls: 22) were partially damaged. Having known the risk of the critical facilities of the district, special consideration can be given to these facilities when formulating disaster management plans.

3.4. Risk Profile of the District

Sindh provincial government with the collaboration of district administration have prioritized 12 union councils as the most vulnerable UCs in District Thatta. Figure 3.7 shows the list of the vulnerable union councils along with the number of population at risk.

Table 3.7: List of vulnerable union councils identified by the district government²⁵

Talukas	Vulnerable Union Councils	At Risk Population in Katcha Areas
Thatta	Jhurruck	17,755
	Jampir	20,614
	Sonda	17,897
	Chuto Chand	21,264
	KalanKot	1,867
	Thatta	20,002
	Domani	19,657
Keti Bunder	Keti Bunder	25,700
Ghorabari	Khan	22,008
	Kotri Allah Rakhio Shah	19,309
	Mahar	21,490
	Udassi	21,136

Besides, table 3.8 shows the List of Union Councils Prone to Risk of Multi-Hazards which shows the prevalence of various hazards while participants ranked and prioritized Thatta and Keti Bunder is high risky Talukas, while Taluka Ghorabari as a Moderate and Mirpur Sakro as Low Risky Taluka of the district. Besides, the Union Councils are at high, moderate and low risky were ranked during the consultation workshop held at Thatta on Dated 22nd March 2017.

During the consultation workshop out of 40 Union Councils, a total of 14 union councils was ranked as at high risk, 12 union councils as moderate and 14 union councils were ranked as low risky respectively. The raking exercise was conducted via group work, they were working in four groups, and the workshop participants prioritize the list of Talukas and Union Council as per severity of the hazards.

25. Monsoon Contingency Plan 2016 Sindh Province

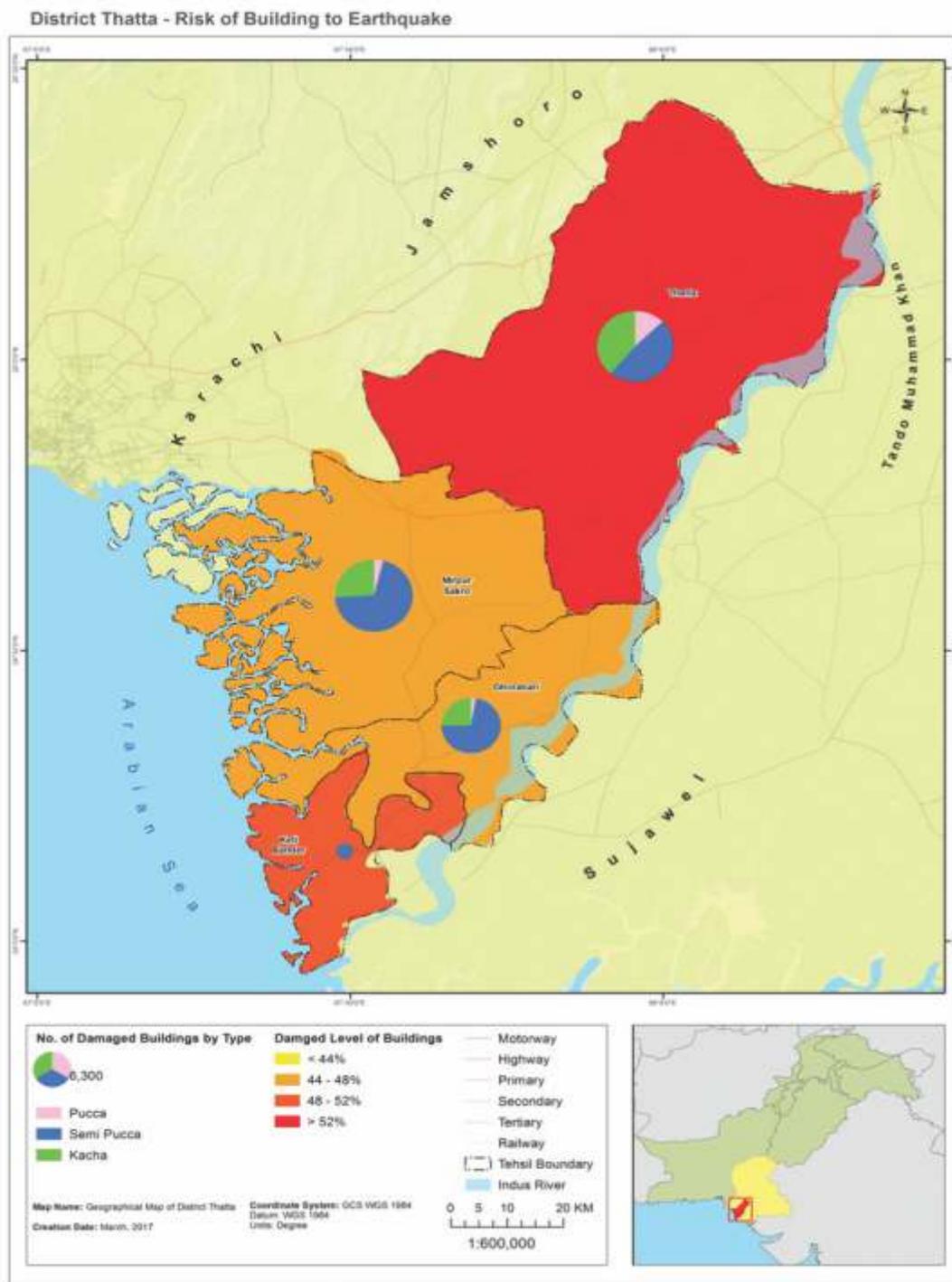
Table 3.8: List of at risk union councils identified during the consultation workshop²⁶

Sr. No.	Name of Union Council	Ranking			Name of Taluka
		High Risk	Moderate Risk	Low Risk	
1	Soof Shoro	High Risk			Thatta
2	Tando Hafiz Shah	High Risk			Thatta
3	Faqeer Jo Ghot	High Risk			Thatta
4	Bijoro	High Risk			Thatta
5	Juna	High Risk			Thatta
6	Jungshahi	High Risk			Thatta
7	Kohistan 7/4	High Risk			Thatta
8	Jhimpir	High Risk			Thatta
9	Jhangri	High Risk			Thatta
10	Khan	High Risk			Ghorabari
11	Mahal	High Risk			Ghorabari
12	Bhagan	High Risk			Keti Bunder
13	Bet Mihyar	High Risk			Keti Bunder
14	Keti Bunder	High Risk			Keti Bunder
15	Doomani		Moderate Risk		Thatta
16	Gul Manda		Moderate Risk		Thatta
17	Jehhruk		Moderate Risk		Thatta
18	Sonda		Moderate Risk		Thatta
19	Buhara		Moderate Risk		Mirpur Sakro
20	Dubo		Moderate Risk		Mirpur Sakro
21	Kakrand		Moderate Risk		Mirpur Sakro
22	Bhamnhore		Moderate Risk		Mirpur Sakro
23	Guleel		Moderate Risk		Ghorabari
24	Jaradali		Moderate Risk		Ghorabari
25	Mahar		Moderate Risk		Ghorabari
26	Girnar		Moderate Risk		Ghorabari
27	Chilya			Low Risk	Thatta
28	Chatto Chand			Low Risk	Thatta
29	Ongar			Low Risk	Thatta
30	Palijani			Low Risk	Mirpur Sakro
31	Gujjo			Low Risk	Mirpur Sakro
32	Samaki			Low Risk	Mirpur Sakro
33	Ghulamullah			Low Risk	Mirpur Sakro
34	Karampure			Low Risk	Mirpur Sakro
35	Sukhpure			Low Risk	Mirpur Sakro
36	Ghaghi			Low Risk	Mirpur Sakro
37	Khagan			Low Risk	Mirpur Sakro
38	Chowbandi			Low Risk	Mirpur Sakro
39	Dhabeji			Low Risk	Mirpur Sakro
40	Indo			Low Risk	Ghorabari

26. Ranked during consultation workshop with district line departments, INGO's, NGO's and CSO's

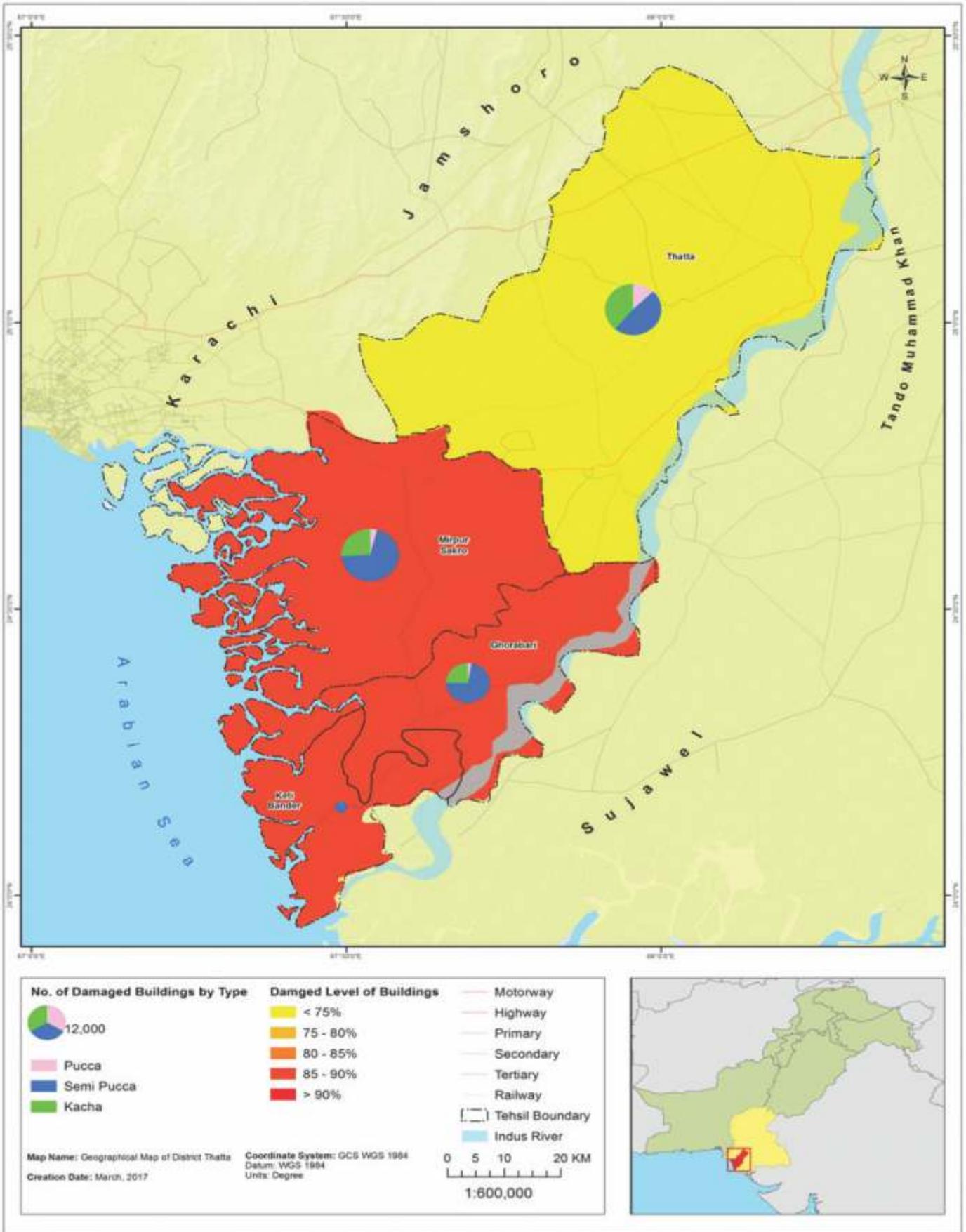
A study on multi-hazard, vulnerability and risk assessment conducted by the NDMA and PDMA Sindh with funding support of WFP indicates risk to various parameters in District Thatta²⁷. Thatta Taluka with high population density can be considered as high at risk to cyclone, floods and earthquake. The figures 3.1 to 3.3 shows Talukas at risk in District Thatta.

Figure 3.1 to 3.3: Taluka wise risk maps in District Thatta

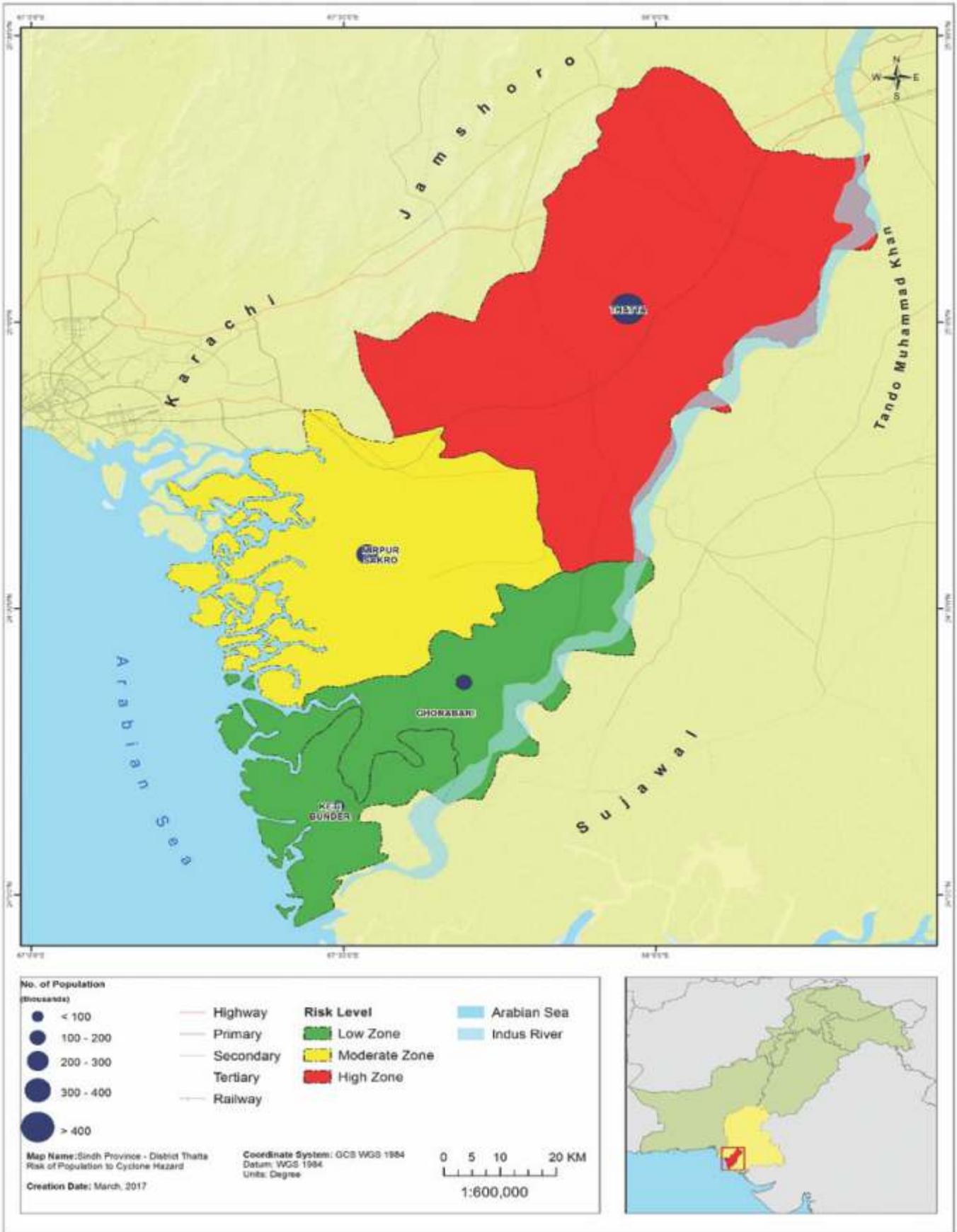


27. Study conducted by NDMA and PDMA Sindh with funding support of WFP. Technical support was given by Asian Disaster Preparedness Center (ADPC) and Network of Disaster Management Practitioners (NDMP)-2014-15

District Thatta - Risk of Building to Cyclone



Sindh Province - District Thatta Risk of Population to Cyclone Hazard





Chapter - 4
Organizational Structure for
the District Disaster Management Authority

Organizational Structure for the District Disaster Management Authority

4.1. Introduction

National Disaster Management Act is promulgated in all over the country during 2010. Chapter IV, section 18 of the NDM Act provides the basis for establishment of District Level Disaster Management Authorities (DDMA). In this regard Provincial government has notified DDMA's in all the districts of Sindh Province and efforts are being made to equip DDMA's with all the necessary facilities and capacities to strengthen the disaster risk management system in the Province.

The law defines DDMA's composition and also outlines their functions, duties and powers. The DDMA is a coordinating body of all government agencies and non-government organizations operating in the district and responsible as a focal authority in the conduction and implementation of plans and actions on disaster management.

Table 4.1: Proposed list of members for DDMA²⁸

Sr.#	Name of Department	Designation
1	District Nazim/ Deputy Commissioner	Chairperson DDMA
2	Additional Deputy Commissioner	DDMO
3	District Police Officer	Member
4	District Officer (Revenue)	Member
5	Two Elected Representatives nominated by the chair	Members
6	Representative of Pak Army	Member/s
7	Two Representatives of NGOs/Civil Society	Members
8	Representative of Coastal Development Authority	Member
9	District Officer (Works & Services)	Member
10	District Health Officer	Member
11	District Education Officer	Member
12	District Officer (C&D)	Member
13	District Agriculture Officer	Member
14	Executive Engineer Irrigation	Member
15	Executive Engineer Public Health	Member
16	District Civil Defense Officer	Member
17	Administrators of Taluka Municipal Administrations	Members
18	All Taluka Municipal Officers in District	Members
19	District Food Controller	Member
20	Representative of Red Crescent	Member

The secretary DDMA will be appointed as District Disaster Management Officer (DDMO) who will provide administrative support to the DDMA and will work directly under the supervision of Deputy Commissioner of the District Thatta.

28. National Disaster Risk Management Framework, NDMA 2007 and National Disaster Management Plan 2012

Under the Deputy Commissioner, the DDMO will be delegated to perform duties at secretariat for the DDMA. The secretariat will be composed of the DC, who will serve as chairperson, while a DDMO as executive officer and a minimum of three staff members who will be incharge of the three tasks, namely Technical Support (Training and Education), Operation Group and Finance and Admin support. The number of staff, procedures and TORs of the secretariat will be developed by the DDMA²⁹.

4.2. Functions of District Disaster Management Authority³⁰

4.2.1. Powers and Functions of Chairperson of the DDMA

The District Disaster Management Authority will be the district planning, coordinating and implementing body for disaster management and will ensure to take all possible measures for the purposes of disaster management in the district in accordance with the guidelines laid down by the NDMA and the PDMA.

The Chairperson of DDMA shall be responsible for:

- ⊙ Provide leadership by taking initiative to achieve DDMP Thatta goals and objectives;
- ⊙ Coordinate with PDMA Sindh and extend administrative support to DDMA secretariat;
- ⊙ Provide legal support to develop and manage strategic plans for effective disaster management at all tiers of DDMA;
- ⊙ Provide guidance and support for the implementation of district response plans, including management of the District Emergency Operation Centre.

4.2.2. Powers and functions of the DDMA

Following powers and functions of DDMA has been defined in the NDMA's NDRMF 2007;

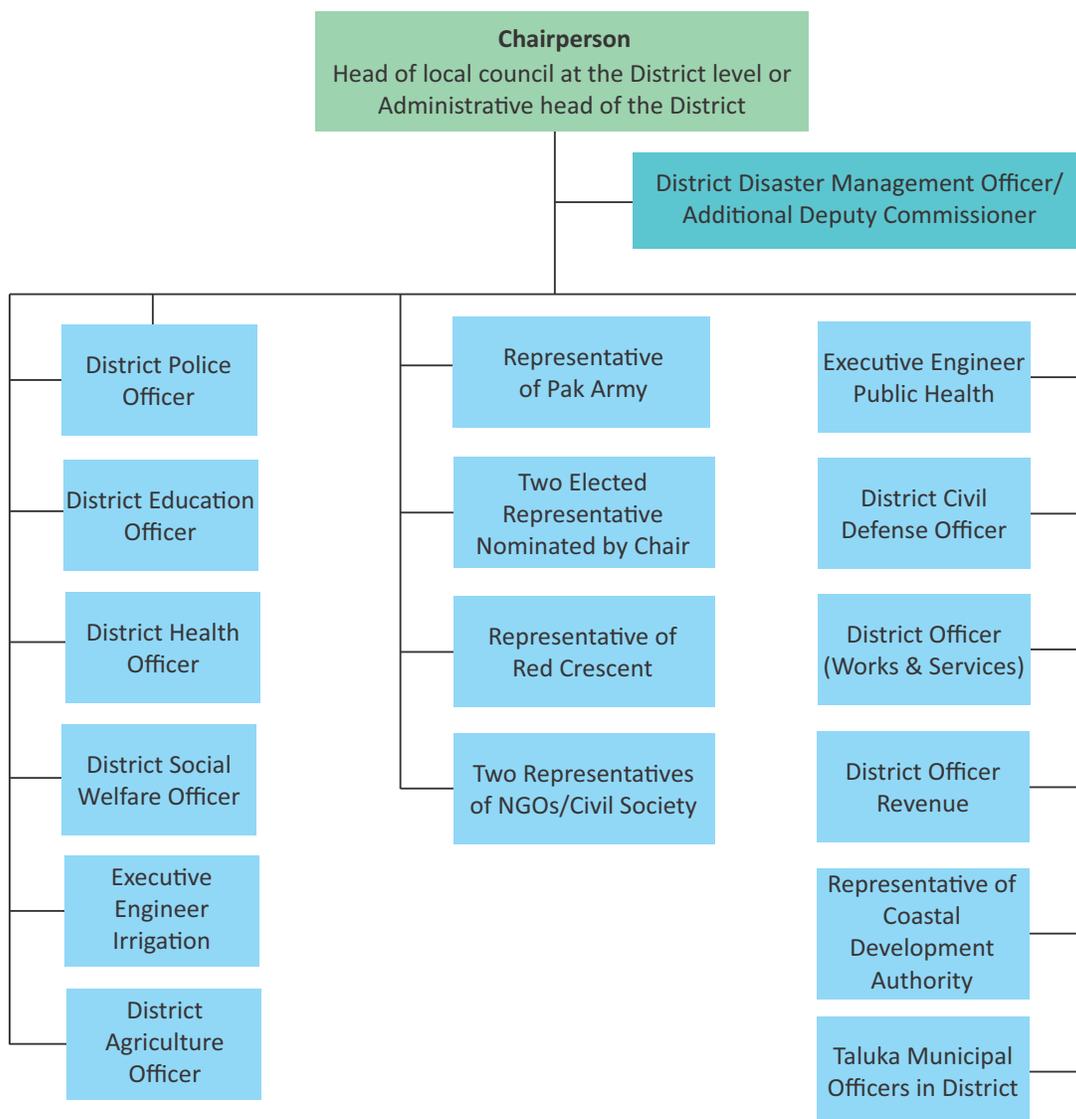
1. Formulate and review a district disaster management plan, including district response plan; in lined with National and Provincial disaster management plans and policies.
2. To ensure that the multi-hazard, vulnerabilities and risk assessment have been done and maps have been developed and prioritized risk prone areas in the district are identified.
3. To coordinate the efforts for prevention and mitigation measures that are undertaken by the government and local authorities in the identified vulnerable areas of the district.
4. To organize and coordinate specialized DRR training programs for different levels of officers, employees, and volunteer rescue workers in the district.
5. To facilitate community training and awareness programs with the support of local authorities, government and non-government organizations.
6. To set up, maintain, review and upgrade the mechanism for early warnings and dissemination of accurate information to concern authorities and the general public.
7. Review development plans prepared by the government departments, statutory or local authorities with a view that DRR has been integrated into the development activities and projects of the plan.
8. To coordinate with, and give guidelines to, local authorities in the district to ensure that pre-disaster and post-disaster management activities in the district are carried out promptly and effectively.
9. To provide guidance and monitor the implementation of government departmental level disaster management plans at the district level.
10. Provide guidelines, prepare, review and update district level response and contingency plans.
11. To identify building 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;
12. To establish stockpiles of relief and rescue materials or ensure preparedness to make such materials available at a short notice.

29. National Disaster Risk Management Framework, NDMA 2007 and National Disaster Management Plan 2012

30. National disaster Risk Management Framework, NDMA 2007

13. Ensure District Emergency Operation Centre (DEOC) has been equipped with all necessary gadgets and operationalized.
14. Activate the District Emergency Operations Centre (DEOC) as early as possible after a disaster occurs.
15. Carry out rapid damage and needs assessment and develop a flash report for assistance and report to PDMA and other relevant stakeholders.
16. Continue and monitor early recovery and rehabilitation activities with the support of I/NGOs, UN Clusters and other stakeholders.
17. Prepare and continuously update databases of external agency projects, future priority areas, funding framework, available resources, areas of operations/expertise etc.
18. To perform such other functions as the provincial government or provincial authority may assign to it as it deems necessary for disaster management in the district.

Figure 4.1: DDMA Organizational Structure at District Level



31. National Disaster Risk Management Framework, NDMA 2007 and National Disaster Management Plan 2012

4.3. Taluka Disaster Management Committee (TDMC)³²

Taluka Disaster Management Committee (TDMC) at this level is the front line institution for disaster management at Taluka level. TDMC shall coordinate and implement disaster risk management activities aligned with district plan at Taluka level. For many departments this is the lowest level of administration where they interface directly with communities and could play a significant role in promoting disaster risk reduction.

4.3.1. Organizational Structure and Members of TDMC

Head of the local council at Taluka level or Administrative head of Taluka shall be appointed as a Chairperson of TDMC and the Taluka Municipal Officer (TMO) shall be the secretary with consultation of DDMA, work directly under DDMO and will provide support and give information of the union councils of the concerned Taluka. TDM committee will be a bridge between government and the community.

Table 4.2: Proposed list of members for TDMC

Sr.#	Name of Department	Designation
1	Taluka Nazim/ Administrative head of Taluka	Chairperson TDMC
2	Taluka Municipal Officer (TMO)	Secretary, TDMC
3	Revenue Department representative at Taluka level	Member
4	Representative from line department at Taluka level	Member/s
5	All elected members (Male and Female)	Members
6	UC DM Committee representatives (President from each committee)	Members
7	Representative of NGO	Member

The member/s can be added in the Taluka Level Structure as per ground realities and need by the Taluka Administration in consultation with District Authority.

4.3.2. Functions of TDMC

The National Disaster Management Framework (NDMF, 2007) clearly elaborates Taluka administrations as front line of disaster management where disaster activities are actually implemented. As per the National Disaster Management Framework and subject to the directions of the DDMA the TDMC shall;

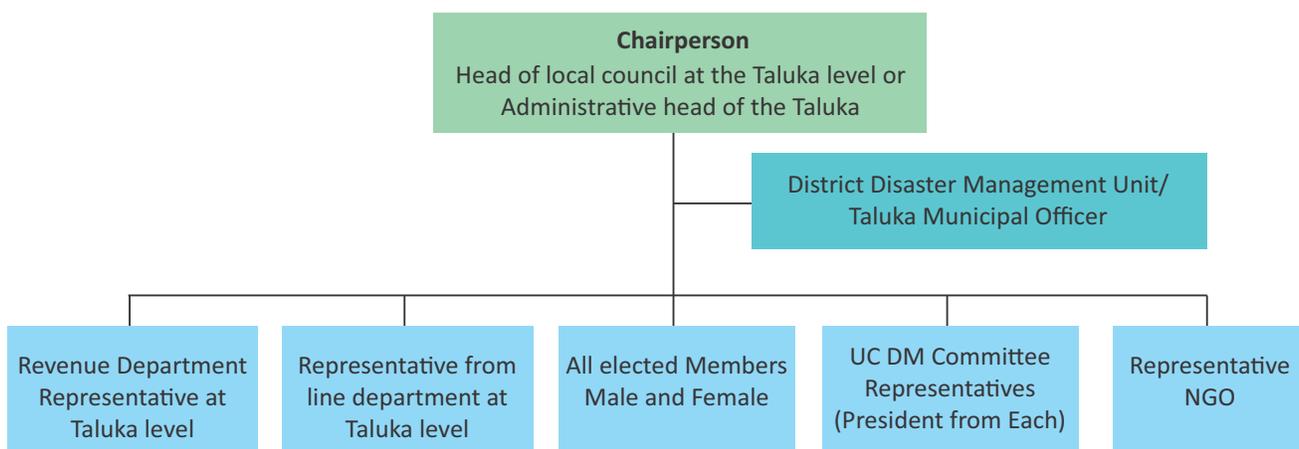
1. Formulation of Taluka Disaster Management Plan (TDMP) keeping in view the specific disaster risk and the needs of their respective locations.
2. Identification and mapping of all hazards in their respective location and conduct risk and vulnerability analysis and communicate with DDMA.
3. Ensure that the officers and employees are trained in disaster management.
4. Ensure that resources relating to disaster management are so maintained as to be readily available for use in the event of any threatening disaster situation or disaster.
5. Coordinate DRR/M operations with DDMA Thatta during different stages of disaster management.

32. The list of committees and possible members have been proposed by the consultant based on reviewing different disaster management plan at national and international level.

6. Land use planning and zoning within the municipality by preparing master plans while keeping the multi hazard context of the municipality and Taluka in mind.
7. Ensure the implementation of bylaws related to encroachment at hazardous places, building codes, land use planning and zonation etc.
8. Identify evacuation/shelter places to face any disaster/emergency.
9. Monitor the disaster management activities of NGOs, UCDMCs and private sectors.
10. Share initial damage and needs assessment reports to DEOC.
11. Establish communication links with DEOC and UCDMCs, NGOs and private donors.
12. Carry out relief, rehabilitation and reconstruction activities in the affected area in accordance with the Provincial Plan and the District Plan.

The TDM Committee may take such other measures as may be necessary for the disaster management.

Figure 4.2: TDMC Organizational Structure at Taluka / Town Level



4.4. Union Council Disaster Management Committee (UCDMC)

Union councils were considered as the lower most level in the government structure having elected representatives from the village and ward levels for these bodies. Under the Local Government Ordinance (LGO) 2001, UC is to assist the relevant authorities during disasters and natural calamities and assist in relief activities. Union councils can play an important role in advocating demands of communities to the District and Taluka Disaster Management Authorities.

4.4.1. Organizational Structure and Members of UCDMC

Union Council Disaster Management Committee (UDMC) proposed to be established to coordinate and implement disaster risk management activities at UC level. Head of the local council or Administration shall be the chairperson of the UCDMC. The composition of the UCDMC is as follows.

Table 4.3: Proposed list of members for UCDMC³³

Sr.#	Name of Department	Designation
1	Union council Nazim or local council Administrator	Chairperson
2	Union Council Secretary	Secretary, UCDMC
3	All elected UC members (Male and Female)	Member
5	Halqa Patwari	Member
6	SHO Police/Representative	Member
7	Representative of RHC/BHU	Member
8	Representative of schools (selected Principal)	Member
9	Representative of local NGO	Member
10	Religious leader (selected Pesh Imam)	Member
11	Representative of VDMC (selected)	Member

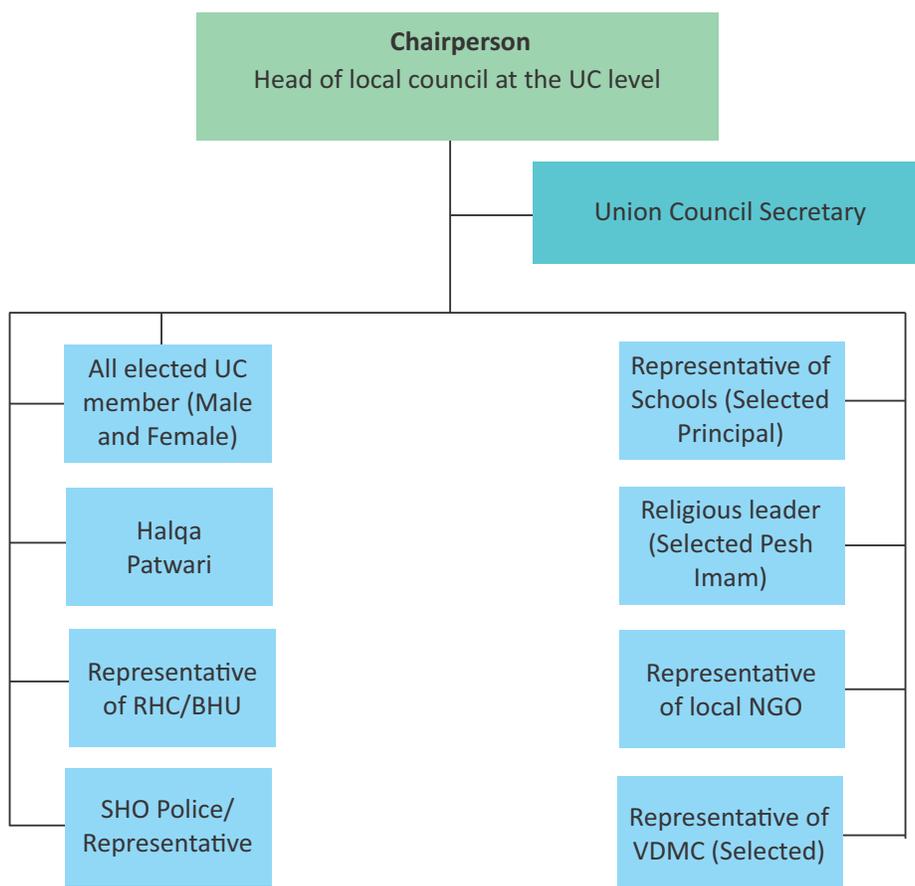
The member/s can be added to the UC level structure as per ground realities and need by the UC Administration in consultation with Taluka and District administration.

4.4.2. Functions of UCDMC

1. Conduct multi hazard, vulnerability and risk assessment and mapping at UC level.
2. Prepare UC level contingent disaster management plan, including disaster/emergency response plan annually.
3. Make an analysis of disaster risk and to prepare a list of vulnerable villages and areas of the concerned union council.
4. Identification, mobilization and disposal of required financial, technical and logistical resources for disaster management operations.
5. Mobilize community for maintaining public ways, public streets, culverts, bridges and public buildings, de-silting of canals and other development activities.
6. Coordinate with the village and neighborhood councils in case of emergency in order to get quick information about the severity and extent of a disaster impact and report it to the TDMC and DDMA.
7. Report cases of handicapped, destitute and socially excluded groups to district government and higher authorities in order to streamline their special needs in relief and response operation.
8. Mobilizing and coordinating work of volunteers, ensuring community participation.
9. Conduct search and rescue operations in coordination with the Civil Defense and Police.
10. Assistance to other agencies for mobility/transport of staff, including rescue parties, relief personnel and relief materials. Communicate with the TDMC/DEOC additional resources required by various control rooms.
11. Establish communication links with DEOC, TDMC, Village Disaster Management Committees (VDMCs), NGO coordinating committee and Private donors.
12. Monitor NGO activities and provide necessary support to ensure community participation by establishing coordination mechanisms among NGOs and local council.

33. The list of committees and possible members have been proposed by the consultant based on reviewing different disaster management plan at national and international level.

Figure 4.3: UCDMC Organizational Structure at Union Council Level



4.5. Village Disaster Management Committee (VDMC)

The lower tier of the DM committee can be called as Village Disaster Management Committee (VDMC). The committee will play a pivotal role as the committee members are at the forefront line against disasters. Therefore, the stronger and organized committees are, more effective response can be guaranteed.

4.5.1. Organizational Structure and Members of VDMC

The VDM Committee will consist of 15 to 20 members. Following Terms of Reference (TORs) can be adopted to select the VDMC members/ volunteers.

1. Members should be permanent resident of the selected village.
2. There shouldn't be more than one member from one house in the committee.
3. They should be capable to read and write Urdu and/ or local language.
4. Selected member should be within the age of 18-40 years and should have a commitment to be part of the village level DM committee on a longer term basis.

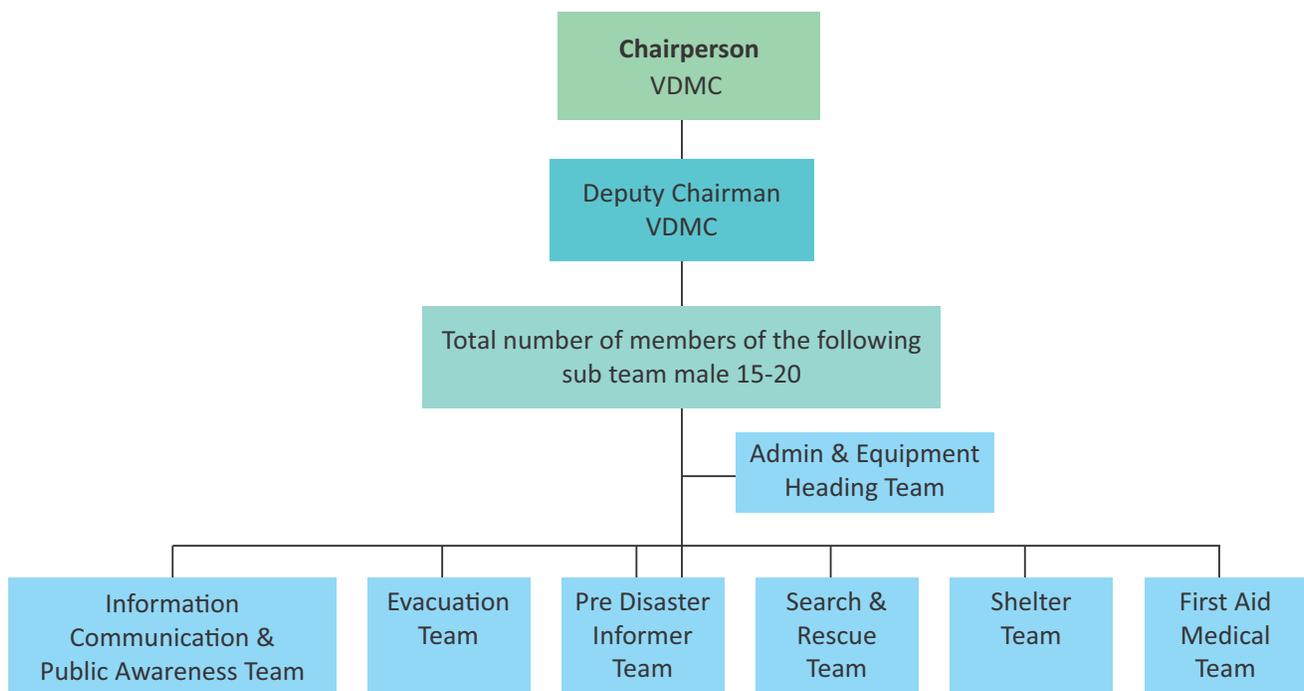
34. The list of committees and possible members have been proposed by the consultant based on reviewing different disaster management plan at national and international level.

5. They should be willing to take active part in capacity building initiatives and relief work.
6. Women, vulnerable groups and PWDs should be members of the VDMC.
7. Notables, elders and educated residents of the villages, preferably members of any existing Community Based Organizations (CBOs) could be preferred.

4.5.2. Functions of VDMC

1. VDMC will analyze the disaster risk and make efforts to reduce the risk of these disasters on village level.
2. VDMC will develop Hazard and social maps and will prepare a village disaster management plan.
3. The committee will conduct trainings for volunteers. For this purpose committee will prepare the list of volunteers on village level.
4. To make the people aware about the natural disasters their management and safety from disasters through these volunteers on village level.
5. The committee will try for prevention of natural disasters through close coordination with UCDMC and DDMA.
6. The committee will arrange and provide manpower to handle the situation during disasters. These people will not work on village level; they will also help Government. Departments during natural and man-made disasters.
7. The committee will establish a uniform system of early warning system and disseminate the vertical flow of information.
8. The committee will identify safe evacuation routes and center in the jurisdiction of VDMC.
9. Committee will make arrangements for acquiring necessary equipment for disaster/emergency response management from Taluka/district administration.
10. Committee will arrange meetings with UCDMC and will follow the instructions given by UCDMC.

Figure 4.4: VDMC Organizational Structure at Village Level





Chapter - 5

Standard Operating Procedures for Emergency Response

Standard Operating Procedures for Emergency Response

For the smooth operation of the emergency activities District Emergency Response Centre (DEOC) has well defined Standard Operating Procedure (SOP). The SOP for emergency response is divided into three key sections, one, the actions common for all disasters by establishing DEOC that cover the actions on receipt of early warning, safe evacuation, actions for response activation i.e. Search and rescue, initial assessment, relief distribution, monitoring, deactivation of response, recovery actions. Secondly, the coordination and information dissemination system along with evacuation measures and third, the specific contingency planning and response actions to the floods.

5.1. District Emergency Operations Centre (DEOC)

Disaster situation at district level is lying under level 1 (localized emergency) in which the situation dealt within the regular operating mode of the emergency management services in the district. In the occurrence of a disaster, the DDMA shall activate the DEOC and take the operational lead for the district government response. For this purpose, the DEOC will serve as the center for receiving early warning and issuing information to public at village level, taking measures to evacuate people, updating relevant departments, response agencies, and media etc. The DEOC will also lead the coordination and management of relief operations in affected areas in the district. All concerned departments and humanitarian agencies will be coordinated by the DEOC at district level. In disaster/emergency situation, the DEOC will be disseminating early warning information, carry out relief coordination and focus on early recovery.

5.1.1. Organizational structure of DEOC

The DEOC will be located at Deputy Commissioner (DC) Office, in the district headquarters equipped with all available communication facilities. The DEOC will be overall supervised and directed by the District Nazim/

Deputy Commissioner (DC) of the district. The DEOC will be headed by the Coordinator and supported by the operations, communication, public information, administration and logistics support teams. DEOC will be working round the clock during the disaster time. In non-disaster times, DEOC will be working during normal office hours and will focus on emergency preparedness and contingency planning.

5.1.2. Functions of DEOC³⁵

1. Formulate emergency preparedness plan and multi hazard contingency plans.
2. Monitor the situation and put everything ready and functional in the DEOC.
3. Receive early warning and screen and issue disaster alerts and warnings from nodal agencies and other sources and communicate the same to all designated authorities and stakeholders
4. Issuance of early warnings to the communities concerning preparedness and safety.
5. Coordinate with NEOC, PDMA, concerned departments and other stakeholders.
6. Monitor emergency operations and make efforts for preventing secondary hazards.
7. Conduct rapid assessment of the relief needs by collecting information from affected area and circulate to PDMA and other concerned departments and stakeholders.
8. Deploy evacuation, medical, search and rescue teams in the affected area.
9. Provide relief assistance in term of relief camp, medical and sanitation facilities, temporary shelter to the affected population in the district.
10. Liaison with concerned departments and stakeholders engaged in emergency response by anticipating resource inventory.
11. Forward urgent information to relevant agencies for immediate action and arrange daily briefings on disaster situations for general public and specific groups.
12. Record keeping and preparation of consolidated reports and response plans and projects.

National Disaster Risk Management framework, NDMA2007, National Disaster Response Plan, NDMA 2012,

5.2. Power and Function of DEOC Coordinator

Following are the power and function of DEOC Coordinator:

1. Under the guidance of the Deputy Commissioner and District Nazim responsible for managing the DEOC and its operation in disaster/emergency, according to the agreed policy, procedures and strategies.
2. Certify information gathering and define technical information requirements in order to develop and advise for possible emergency response.
3. Responsible to activate the DEOC properly according to the agreed procedures.
4. Responsible to develop and review the communication mechanisms with the department, PEOC and NEOC, armed forces, NLC, UN, Media, and I/NGOs all these stakeholders get information on time PEOC, NEOC, department representatives, I/NGOs and other humanitarian organization and Media.
5. Liaise with different humanitarian organizations involved in the humanitarian response.
6. Ensure that the Emergency Coordinator DEOC has informed all relevant department representative in the district during the alert stage to get ready for the disaster/emergency.
7. Ensure that the early warning is disseminated at every level so that everyone is informed in the district, coordinate and review the preparedness of DEOC in the alert and warning and for responses.
8. Make sure that the operation team of DEOC has developed plans for possible deployment of doctors, search & rescue team and other appropriate services are ready to be deployed.
9. To coordinate assessments, relief supplies management and distribution etc. during crisis coordination with external stakeholders in order to provide support to the disaster affected areas throughout the district.
10. Develop and implement security guidelines for the DEOC staff and for the humanitarian organizations.

5.3. Standard Operating Procedure - Activation Procedure for DEOC³⁶

5.3.1. Standby Position (Stage 1)

The stage one of the DEOC procedure is called the standby position. In standby position the DEOC is alert and ready to start emergency operations. DEOC receives information from and regular updates on the potential disaster from Taluka/ town/UCs administration/ flood control room about the situation. And advises chairperson DDMA (DC) to seek alert/ activation approval. Approval of Alert phase is notified to the key departments at district and below the district level, PEOC and NEOC.

5.3.2. Activation Procedure (Stage 2)

Stage two of the DEOC procedure is called the activation stage. In the stage 2 an announcement for full activation of DEOC issued and DEOC remains fully operational in 24/7 basis. The Secretary/Chairperson DDMA will inform concerned departments at district level, e.g. Civil Defense, TMAs, Irrigation, Agriculture & Livestock, Police, Soil Conservation, Public Health Engineering, Health, Education, Communication & Works, Revenue, PEOC and NEOC.

5.3.3. Stand down Procedure (Stage 3)

The third stage of the DEOC is also called stand down procedure. At the stand down procedure, the overall the situation is reviewed after reviewing the situation and consult with Taluka/town administration, Coordinator DEOC will advise chairperson DDMA for stand down. Consequently, getting the approval of PDMC, Chairman DDMC will approve the stand down of the DEOC. DEOC/DDMA will notify to the key departments at all levels, PDMA Sindh and NDMA etc. At the end the final report on the emergency operations will be circulated to key stakeholders.

36. National Disaster Response Plan 2012

5.4. Operationalization of DEOC

From operationalization of DEOC, means complete activation of DEOC during disaster situations. And activation will be only possible when the DEOC is fully equipped. In this regards the Coordinator DEOC will be liable to completely equip the DEOC and provide all facilities to the representatives of departments who will be present in DEOC during disaster time. Stock of emergency food, office supplies, satellite phone sets, generators, logs, status boards, maps, screens and multimedia projectors and other necessary equipment must be available.

5.5. Coordination and Information Dissemination Mechanism

For the coordination and information dissemination mechanism, it's essential to strengthen the coordination systems amongst relevant line departments, organizations other relevant stakeholders which are important at the time of disaster. DDMA would engage pertinent district and provincial departments to establish effective coordination and information dissemination mechanism in order to upgrade an effective early warning system. The warning of disaster threat received will be passed on directly to the DDMA/Coordinator of the DEOC who will direct the information to the most needed department and communities (as per the nature of the disaster) to take immediate steps.

5.5.1. Warning & Information Dissemination

DDMA will ensure all public warnings will be distributed through the secretariat upon recommendation of the chairperson of the authority. Dissemination of warning and information in disaster situation is the core responsibility of DDMA/DEOC. DDMA will assure all public warnings and will be distributed through the secretariat. The information which is conceded on to

the public in pre, during, and post disaster, which includes, warnings, and directions for evacuations and service access to affected populations. For the information dissemination an electronic and press media will be used to distribute the warning to the general public and concerned authorities for appropriate standby preparedness and response measures.

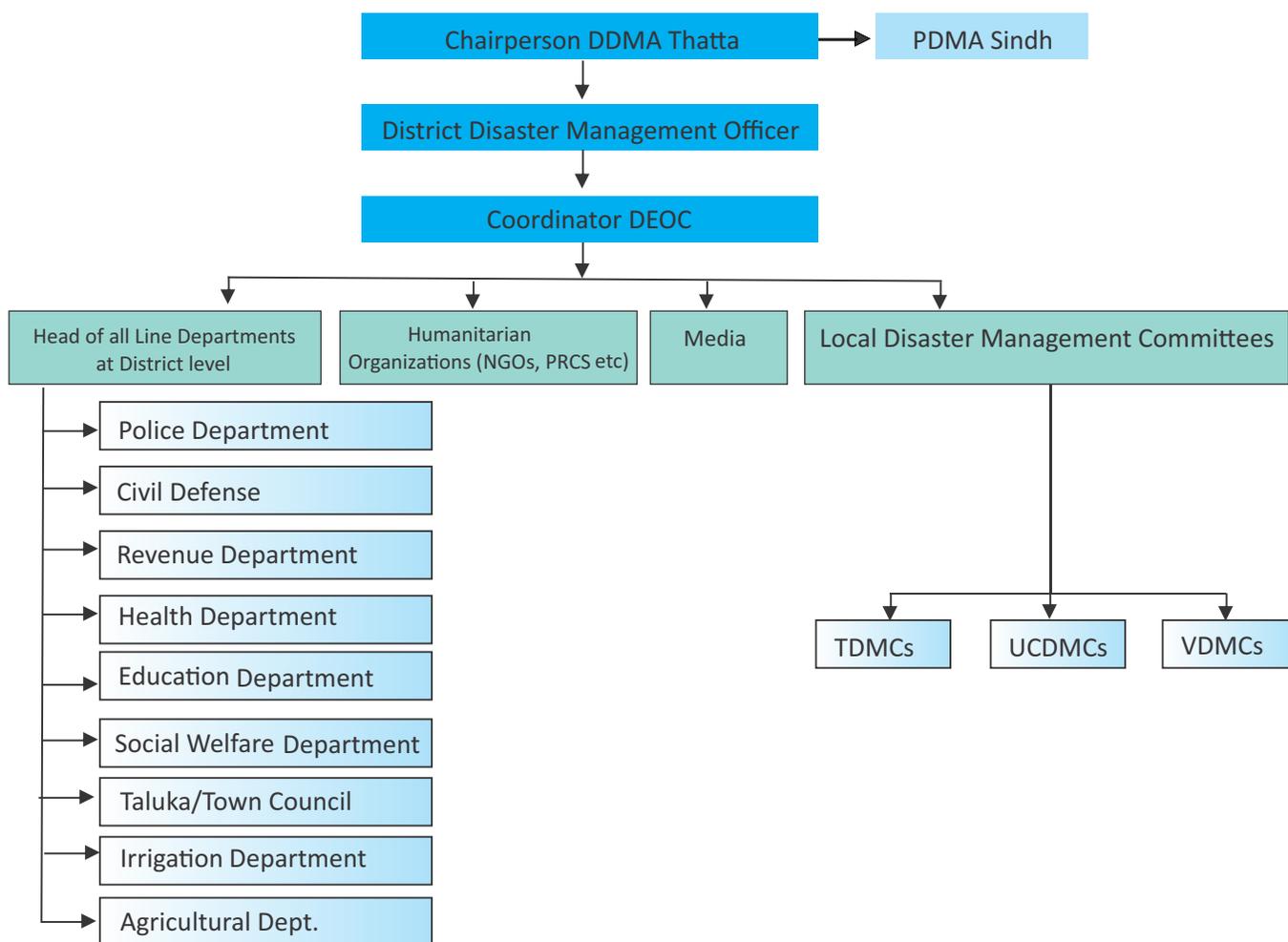
5.5.2. Reporting and Media Briefing

During a disaster situation its DEOC which will take the lead in matter associated with reporting and media briefing. Altogether district line departments and organizations are responsible to submit regular updated situation reports to the DEOC situated in the DDMA. The coordinator DEOC will analyze the reports received and circulate regular update and situation reports to all concerned stakeholders and arrange the media briefings and interviews with key personnel and media channels for proper dissemination of the information regarding disaster situation in order to reduce the risks.

5.5.3. Coordination in Assistance

In a disaster or emergency condition in which the district capacity and resources are overwhelming. Within disaster situation the requests for internal and external assistance will be made by the District Nazim or Deputy Commissioner to the Provincial Disaster Management Authority (PDMA). Besides, DEOC will arrange the coordination mechanism by inviting all concerned line departments, NGOs and institution put their efforts by working together with DDMA for reducing the impacts of the disaster. However, the Taluka Administration and Union Council bodies will make requests to the District Authorities for the possible involvement of any concerned department to meet the disaster situation.

Figure 5.1. Emergency Response Coordination Mechanism at District Level



5.6. Activities on Evacuation and Accommodation

Evacuation and accommodation are one of the core activities in emergency situations. Evacuation of people to a safer place in a disaster is the obligation of DDMA for which a detailed plan will be prepared. The DDMA need to collect disaster risk information in collaboration with nodal agencies. If any emergency risks are recognized, DDMA shall provide information on evacuation preparedness, evacuation directives and evacuation orders to residents in the disaster prone areas. Following are the measures to be adopted an evacuation.

5.6.1. Leading Evacuation

Leading evacuation of residents, which taking into account, securing lives of the residents is the first priority. Regarding the evacuation DDMA need to take certain measure like to develop and explain the roles and responsibilities of the government officials or designated staff, prepare a team of Government officials from different departments, Armed Forces and volunteers for evacuation, prepare safer routes in advance, time planning, shelter develop a transport plan for evacuation. When leading evacuation, local governments shall need to put effort into disseminating various information on evacuation sites, evacuation routes, and high-risk areas from disasters, outline of the damage and other related matters that help smooth evacuation.

5.6.2. Establishing and Managing Evacuation Sites

Establishing and managing evacuation sites are an important element for the effective evacuation. DDMA need to designate emergency evacuation sites in advance, such as urban parks, community halls and schools. DDMA shall also need to put effort into developing necessary facilities at evacuation sites, such as water tanks, wells, temporary toilets, blankets and telecommunication equipment. In addition, the local government shall pay special attention to the people in vulnerable groups such as the elderly, handicapped, infants and women at evacuation sites. DDMA will properly manage each evacuation site and will need to put effort into distributing information, food, water and cleaning supplies, in cooperation with evacuees, residents and community disaster management Organizations. In light of this, DDMA will request cooperation from other government authorities if needed.

5.7. Emergency Drills and Simulations

The DDMA along with Pakistan Red Crescent Society (PRCS), Social welfare and Civil Defence will plan emergency response exercises and drills on various scenarios to assess and build the capacity of the resource persons, supposed to be involved in emergency management. To reduce the impact of the imminent disaster in district Thatta. Agencies and departments shall also conduct drills based on the hazard scenarios and sectorial response plans. In a pre-disaster situation DDMA will plan and carry out exercises or drills with the objectives to ensure that disaster response drills are conducted in the disaster prone areas to maintain the readiness of communities and departments, with regards of operational procedures, personnel, equipment and orderly response.

5.7.1. Responsibility for Organizing Drills

Organizing drill at the district level will be the core responsibility of DDMA. DDMA will plan simulation exercises or drills on various scenarios to assess the procedures in this document and those from contingency plans for districts and departments. The DDMA will lead the drill activities on pre and post scenarios of disaster/emergency at district level. The government departments and humanitarian agencies shall also conduct drills based on the hazard scenarios and sectorial response plans.

5.7.2. Schedules for Organizing Drills

There is a need to have a district level schedule for organizing drill. In this respect the training and education officer of DDMA will be assigned a responsibility to develop an annual calendar for in order to conduct drills at regular basis. The DDMA will make arrangements for organizing the emergency drills at district and below level by following the scheduled plan in the document. Each department may organize their sectorial drills at realistic and convenient schedule.

5.7.3. Resources for Organizing Drills

To organize drills the DDMA, Social Welfare, District Civil Defence and Pakistan Red Crescent (PRC) will provide the technical support in organizing drill. Besides, the DDMA and its member departments will mobilize financial/logistic resources to organize exercises or drills. The humanitarian agency will also be encouraged to set aside funds for contingent both DDMA coordinated drills and individual organizational drills.

Strategic Priority Areas with Proposed Interventions for Disaster Risk Management (July 2017-June 2027)

6.1. Introduction

National Disaster Management Plan (NDMP) has been developed and implemented by the National Disaster Management Authority during 2012 throughout the country. The NDMP provides strategic guidelines and provoke for adopting pro-active approach with focus on Disaster Risk Reduction interventions to be implemented during 2012-2022. Similarly, an effort has been made by the Provincial Disaster management Authority in Sindh to set a road map in the form of Provincial Disaster Management Plan (PDMP) during 2008. Inline with the PDMP, the District Government Thatta has developed Disaster Management Plan during 2008, which needs major revision especially after the separation of Sujawal as separate district and then frequent disasters happened during this decade highlight the need for revising and updating the District Disaster Management Plan for District Thatta.

The DDMP Thatta is aligned with the National Disaster Management Plan, thus envisages nine strategic priority areas to establish an efficient and effective disaster risk management system in the district. The plan symbolizes the multi-faceted interventions which relate to different phases of disaster management cycle i.e. pre, during and post disaster. This section highlights the potential stakeholders for accomplishing of the below mentioned strategic priorities.

Priority Area 1:

Strengthening the district level institutional and legal system for disaster management

Priority Area 2:

Prepare disaster management plans at various levels

Priority Area 3:

Conduct multi-hazard, vulnerability and risk assessment (MHVRA)

Priority Area 4:

Establish/ strengthening multi hazard early warning system

Priority Area 5:

Disaster risk management through training, education and awareness

Priority Area 6:

Strengthening DRM through disaster resilient communities

Priority Area 7:

Mainstreaming DRR into development Sector

Priority Area 8:

Strengthening district emergency response system

Priority Area 9:

Capacity development planning for post disaster recovery

6.1.1. Priority Area 1: Strengthening the district level institutional and legal system for disaster management

Rationale

Under the National Disaster Management Act 2010, disaster management organization at the national, provincial and district levels have been formed. Although the DMS system in the country is in embryonic stage, however, the progress is very satisfactory and slowly the system is gearing up with more defined and clear roles and responsibilities at each level of the government. It has been witnessed that ad-hoc arrangement to appoint District Disaster Management Officers at DDMA is normal practice in most of the provinces and districts. Sindh government has nominated Additional Deputy Commissioner or Assistant Commissioner with an additional charge of District Disaster Management Officer (DDMO) in all districts. In order to fully functionally the DDMA Thatta, the following interventions are needed to be addressed.

Name of strategic priority areas with proposed interventions	Priority			Potentials implementing Partners
	Short Term (1-3 years)	Medium Term (4-6 years)	Long Term (7-10 years)	
Strategic Priority Area 1: Strengthening the district level institutional and legal system for disaster management				
Notification and strengthening of the DDMA by providing all necessary equipment, dedicated officers with allied staff	X			DC office, DDMA, PDMA and NDMA
Formation of steering and monitoring committee for implementation of the DDMP for coming ten years	X	X	X	DC office, DDMA and member of the line government department
Establishment of DRR cell which keep close liaison with the DRR committee members, electronic and print media and general public for providing information on DRR and emergency response	X	X	X	DC office, PDMA, DDMA and member of the line government department
Enhancing the capacities of DDMA staff and all other associated District and Taluka level stakeholders	X	X	X	DDMA, INGOs, UN Organization
Formation of Taluka level Disaster Management Committees (TDMCs)		X		DC office and DDMA

6.1.2. Priority Area 2: Prepare disaster management plans at various levels

Rationale

National Disaster Management Act 2010 and National Disaster Management Plan 2012- 2022, provides guidelines for formulating disaster management plans at provincial, district and sector disaster management plans. In this regards, Sindh government has taken an initiative and developed provincial DDMP in 2008 and few districts DRM Plan in 2008-09. However, these plans have not been implemented effectively due to lack of capacity of institutional, it's outdated status and were also not aligned with the NDM Plan 2012-2022. Likewise, the district Thatta DRM plan has also been developed back in 2008, but it has the similar problem as it is neither implemented nor it is aligned with NDMP 2012-2022 and PDMA Sindh DRMP 2008, Hence forward it is essential to develop District Disaster Management Plans in remaining districts of Sindh and also revised the already developed plan in light of NDMP-2012-2022 and with the support of PDMA Sindh. In this regards, DDMP Thatta will be one of the initiatives, which will further help in formulating the sectoral disaster management plans of the district line departments and local disaster management committees.

Name of strategic priority areas with proposed interventions	Priority			Potentials implementing Partners
	Short Term (1-3 years)	Medium Term (4-6 years)	Long Term (7-10 years)	
Strategic Priority Area 2: Prepare disaster management plans at various level				
Formation of Taluka Level Disaster Management Plans especially of those of most vulnerable Taluka	X	X		DDMA, TDMCs, TMAs
Formation of Union Council Disaster Management Plans especially target vulnerable UCs	X	X	X	TMAs, LGRD, DDMA, TDMCs
Development of the Village Level Disaster Management Plans through I/NGOs/CSOs	X	X	X	I/NGOs, CSOs, DDMA, Civil Defence, PRCS, Social Welfare
Development of organization Level Disaster Management Plans especially for key sectors	X	X	X	All line department and DDMA
Development of Emergency Response Plans for industrial units in the District	X	X		Chamber of commerce, Industrial units, DDMA
Developing evacuation plans at schools those situated in cyclone and flood prone areas	X	X	X	Education, DDMA, PTCs, Civil Defence and PRCS
Developing Cyclone Contingency Plans at Taluka and District level		X	X	DDMA, PDMA and DC office
Developing evacuation plan for Keti Bunder city			X	TMA and DDMA

6.1.3. Priority Area 3: Conduct Multi-Hazard, Vulnerability and Risk Assessment (MHVRA)

Rationale

Multi-Hazard Vulnerability and Risk Assessment (MHVRA) is an important component for disaster risk management planning and implementation. However, a proficient disaster risk management requires precise, particular and up-to-date data on hazard, prevailing vulnerabilities and the probable risks associated with the communities, infrastructure and livelihood etc. For the purpose a detailed risk assessment would needs which covers the features like specific hazards type and severity, vulnerability exposure and coping capacities of the current situations need to be done in formulating an effective and doable planning at all concern levels of District Thatta. Although at Sindh level information on spatial distribution of selected natural hazards and vulnerable areas available in digitized form as a decision making tool for risk reduction programming, but unfortunately information about hazard risk, specific to vulnerable areas and at various levels (Talukas, union council, and village) is very limited. Similarly, information for identifying priorities and making decisions for risk reduction is not centrally available. Multi-Hazard, Capacity & Vulnerability Assessment (MHCVA) needs to be undertaken in the village, union council, and Taluka and district levels. There is a need to develop a mechanism and systems.

Name of strategic priority areas with proposed interventions	Priority			Potentials implementing Partners
	Short Term (1-3 years)	Medium Term (4-6 years)	Long Term (7-10 years)	
Strategic Priority Area 3: Conduct Multi-Hazard, Vulnerability and Risk Assessment (MHVRA)				
As per guidelines of the NDMA, develop risk profile and atlas of District Thatta on MHVRA at macro level.	X			DDMA, PDMA, NDMA, INGOs, UNO.
Prioritize Villages and Union Councils at each Taluka level prone to various hazards. Develop MHVRA Atlas of the Concerned Talukas.		X	X	TDMCs, TMAs and DDMA, INGOs, UNO.
MHVRA of key cities prone to Cyclone and flood hazards.		X		DDMA, PDMA, NDMA, INGOs, UNO
MHVRA of key industrial units situated in the district.	X			Chamber of commerce, Industrial units, DDMA.
Developing GIS and Remote Sensing labs for data development at DDMA about MHVRA.	X	X		NDMA, PDMA, DC office, DDMA
Developing village level MHVRA as per standard data collection tools standardized by PDMA and NDMA.	X	X	X	I/NGOs, UCDMCs, VDMCs and CSOs, DDMA.

6.1.4. Priority Area 4: Establish / Strengthening Multi Hazard Early Warning System

Rationale

Multi-hazard early warning system main objective is to build on advance level warning system and to improve the capacity of decision makers and communities to take appropriate action prior to the occurrence of an imminent hazard. Strengthening of Multi-hazard early warning system is the real need of the district. Through Multi-hazard early warning system (EWS) it is only possible to collect information, analysis and dissemination of imminent hazard and risk. At District Thatta, DDMA has developed a state of the art control room for receiving and disseminating early warning, however the issue still exists in the absence of consultative and collaborative efforts among the concerned departments/agencies/committees which need to be developed by following the SOPs of DDMA/DEOC.

Name of strategic priority areas with proposed interventions	Priority			Potentials implementing Partners
	Short Term (1-3 years)	Medium Term (4-6 years)	Long Term (7-10 years)	
Strategic Priority Area 4: Establish/ Strengthening Multi- Hazard Early Warning System				
Develop coordination mechanism and conduct regular meetings between DDMA, PMD, WAPDA, FFC and other government and non-government stakeholders on Flood and Cyclone EWS strengthening.	X	X	X	DDMA and line department.
Maintain and upgrade equipment at DEOC and warehouse and instruments for early warning related with flood and cyclone hazards etc.		X		DC office and DDMA, PMD, NDMA and PDMA.
Formation of District and Taluka EWS forum and capacity building of the staff involved in the forum.	X	X	X	DDMA, TDMCs, TMAs, LGRD, I/NGOs and CSOs.
Develop clear SOPs for community based multi hazard early warning system operationalization.	X			PDMA and DDMA.
Develop union council and community based EWS teams through INGOs and CSOs.		X	X	DDMA, Civil Defence, Social welfare, PRCS, UNO, I/NGOs and CSOs.
Launch awareness campaigns related to early warning through IEC material and engaging electronic and print media.	X	X	X	DDMA, Education, Health, PRCS, Civil Defence and TMAs, TDMCs.
Community Based Cyclone EWS system development and capacity building initiatives.	X			TDMCs, UCDMCs and VDMCs.

6.1.5. Priority Area 5: Disaster risk management through training, education and awareness

Rationale

Disaster management training, education and awareness activities are important component for disaster risk management. Through training and educational capacity of the disaster management authorities/committees can enhanced. Which can create significant changes in behavior of the disaster affected communities and among other stakeholders. Recent natural and human induced disasters highlight the importance of public awareness, and stress the need of enhancing the capacities through awareness, training and education in disaster risk management. NDMA has developed Trainer's manuals and those training manuals are used as community-based disaster risk management (CBDRM) tools, develop annual reports, newsletters, IEC material for the promotions of training, education and awareness in relation to disaster management. These materials can be utilized and mold by the provincial and district authorities in their local context. It needs to be materializing with the spirit to create awareness about the hazards and take measures to save lives and minimize damages.

Name of strategic priority areas with proposed interventions	Priority			Potentials implementing Partners
	Short Term (1 -3 years)	Medium Term (4 -6 years)	Long Term (7 -10 years)	
Strategic Priority Area 5: Disaster risk management through training, education and awareness				
Conduct Training Needs Assessment of the District Government Officers for DRR related training programmes.	X			DDMA and line department.
Conduct trainings of 3-day duration on Disaster Risk Management for district government officers.	X			DDMA and line department.
Conduct courses on School Safety Program as per NDMA guidelines and Policy.		X	X	Education and DDMA.
Conduct training needs assessment for community level trainings.	X			Civil Defence and DDMA.
Develop courses on cyclone disaster risk management and developing pool of master trainers for community level courses.		X		PMD, DDMA and PDMA.
Develop courses on flood disaster risk management and developing pool of master trainers for community level courses.		X		PMD, DDMA and PDMA.

Name of strategic priority areas with proposed interventions	Priority			Potentials implementing Partners
	Short Term (1 - 3 years)	Medium Term (4 - 6 years)	Long Term (7 - 10 years)	
Strategic Priority Area 5: Disaster risk management through training, education and awareness				
Conduct public awareness activities in villages and communities to increase awareness on hazards as well as preparedness and response activities.		X	X	DDMA, TDMCs, TMAs, LHRD, UCDMCs and VDMCs, UNO, I/NGOs and CSOs.
Develop training toolkit and develop pool of master trainers for specific courses including CBDRM, Community Based Early Warning System, Evacuation Management, School Based DRM programme and Health Based DRM programme,	X	X	X	DDMA, TDMCs, TMAs, LHRD, UCDMCs and VDMCs, UNO, I/NGOs and CSOs.
Develop volunteer and master trainer's data-base at DDMA and TDMCs and utilize them in community based trainings.	X	X	X	DDMA, TDMCs, TMAs, LHRD, UCDMCs and VDMCs, UNO, I/NGOs and CSOs.

6.1.6. Priority Area 6: Strengthening DRM through disaster resilient communities

Rationale

Considering the characteristic of the disaster risk management, it is of immense needs that disaster risk reduction programs are implemented for awareness and capacity development at the local level, including local government officials, communities, and civil society organizations. The investments in building capacities of communities in risk reduction planning and management came up as strategic area of intervention. Awareness programs at the community and local level is the heart of disaster management initiatives. As communities and local authorities are the first responder to any disaster have an important role to play in reducing hazards, risks effective preparedness planning and mounting a rapid response in order to save lives and assets.

Name of strategic priority areas with proposed interventions	Priority			Potentials implementing Partners
	Short Term (1-3 years)	Medium Term (4-6 years)	Long Term (7-10 years)	
Strategic Priority Area 6: Strengthening DRM through disaster resilient communities				
Formation of Health Based DM Committees.			X	Health, DDMA and PDMA.
Formation of School Based DM committees.			X	Education, DDMA and PDMA.
Implement CBDRM intervention through different I/NGOs (including structural and non-structural Interventions) in priority union councils.	X	X	X	DDMA, TDMCs, UCDMCs, UNO, I/NGOs and CSOs.
Develop 10 model villages in different Talukas through CBDRM approach.	X	X	X	DDMA, TDMCs, UCDMCs, UNO, I/NGOs and CSOs.
Conduct awareness sessions on DRR and conduct simulation/drills in selected communities in hazard prone Talukas.	X	X	X	DDMA, TDMCs, UCDMCs, UNO, I/NGOs and CSOs.
Formation of UC and Village Level Disaster Management Committees through I/NGOs and CSOs.	X	X	X	DDMA, TDMCs, UCDMCs, UNO, I/NGOs and CSOs.
Develop volunteer data on village and UC level for emergency response.	X	X	X	DDMA.
Develop coordination mechanism and regular meeting between DDMA, Civil Defence, PRCS, UCDMCs and VDMCs.	X	X	X	DDMA, PRCS, Social Welfare, Civil Defence, TDMCs, UCDMCs, VDMCs, I/NGOs and CSOs.
Implement structural strengthening in selected communities through UNO, I/NGOs/CSOs.		X	X	DDMA, TDMCs, UNO, I/NGOs.

6.1.7. Priority Area 7: Mainstreaming DRR into development sector

Rationale

National Disaster Management Authority (NDMA) proposed DRR mainstreaming strategy. In order to ensure that future development programs and projects of selected ministries and donors in disaster prone areas incorporate elements of disaster risk assessment and risk reduction in the planning, design and implementation stages so that sustainable economic and social development could be achieved by minimizing shocks from disasters. There is an immense need to ensure that all development infrastructures in hazard-prone areas are built to higher standards of hazard resiliency; e.g. schools, hospitals, roads, bridges, dams and telecommunications infrastructure etc. following the DRR guidelines formulated by the Planning Commission of Pakistan.

The district Thatta level the DDMA Thatta and the line department i.e. Revenue, planning and finance, communication and work etc. can review and implement DRR mainstreaming polices and guidelines. For this purpose, the capacity building for integrating risk reduction programs, planning and design etc. needs to be planned.

Name of strategic priority areas with proposed interventions	Priority			Potentials implementing Partners
	Short Term (1-3 years)	Medium Term (4-6 years)	Long Term (7-10 years)	
Strategic Priority Area 7: Mainstreaming DRR into development sector				
Conducted training toolkit and conducted trainings on mainstreaming DRR into development sectors for government sectors officers.	X			PDMA, DDMA and line department.
Conduct Industrial Risk Assessment.	X	X		Chamber of Commerce, industrial units, DDMA.
Retrofitting of school in the coastal communities.		X	X	Education, DDMA, TDMCs, UNO, I/NGOs and CSOs.
Construction of shelter places in coastal communities.		X	X	DDMA, TDMCs, UNO, I/NGOs and CSOs.
Strengthening the communities through flood protection DRR measures.		X	X	DDMA, TDMCs, UNO, I/NGOs and CSOs.

6.1.8. Priority Area 8: Strengthening district emergency response system

Rationale

Emergency Response system establishment at district level plays in integral part in the disaster risk management. The purpose of the emergency response system is to enhance the district authorities and DDMA capacities to manage local level disasters using a comprehensive national response approach. In this regard the role of DDMA's were imperative as the DDMA is the one who should devise a structure for emergency response at different levels in the district. Likewise, DDMA ascertains the roles and responsibilities of numerous stakeholders, and place down coordination mechanism for activities with the UN, I/NGOs, civil society, the news media, public and private sector, and local humanitarians to carry together a full range of local capabilities to manage any disaster.

Name of strategic priority areas with proposed interventions	Priority			Potentials implementing Partners
	Short Term (1-3 years)	Medium Term (4-6 years)	Long Term (7-10 years)	
Strategic Priority Area 8: Strengthening district emergency response system				
Establishment of state of the art District Emergency Operation Center in the vicinity of the Deputy Commissioner office.	X	X		NDMA, PDMA, DDMA and UNO.
Establish warehouse at appropriate location under the direct control of DC office.		X		WFP, PDMA and District Government.
Stockpiling emergency response kits for the UCDMCs and VDMCs at selected UCs.		X		WFP, PDMA, District Government and DDMA.
Establish Emergency Response Team (ERT) in target hazards prone UCs.	X	X	X	DDMA, Civil Defence, PRCS, TDMCs, UCDMCs, VDMCs, UNO, I/NGOs and CSOs.
Capacity building through series of TOTs on Emergency Response Teams.	X	X	X	Civil Defence, TMAs, PRCS, DDMA, TDMCs, I/NGOs and CSOs.
Develop database of government and private emergency ambulances and link it to Health based DR committees, DDMA and TDMCs.	X	X	X	Health, NHEPRN, DDMA and TDMCs.
Rejuvenating the civil defence force of volunteers and link it to local VDMCs/UCDMCs and TDMCs.	X	X	X	Civil Defence and DDMA, TDMCs and UNDMCs.
Conduct regular drills and simulation exercises in school, hospitals and other public places.	X	X	X	Education, Health, DHQs, DDMA and TDMCs.
Establish Trauma center at RHCs.		X		Health and DDMA.

6.1.9. Priority Area 9: Capacity development planning for post disaster recovery

Rationale

The super floods 2010, followed by 2011 floods and 2014 Nanuk cyclone in district Thatta was the most devastating example of natural disasters which have resulted in many deaths, damaged standing crops, left many more homeless, killed hundreds of livestock, and damaged infrastructure. The foremost cause of such heavy losses and damages is lack of preparedness, planning at the country, provinces and districts limited institutional and organizational capacity for disaster management, emergency response and post disaster recovery capacities. To cope with such natural and man-made disasters, it is important to strengthen institutional and organizational capacity, provide for robust preparedness and recovery planning, clarify the roles and responsibilities of different stakeholders in post disaster recovery, and place a mechanisms for early recovery preparedness and fast track recovery activities.

Name of strategic priority areas with proposed interventions	Priority			Potentials implementing Partners
	Short Term (1-3 years)	Medium Term (4-6 years)	Long Term (7-10 years)	
Strategic Priority Area 9: Capacity development planning for post disaster recovery				
Building capacities in damage needs assessment.		X		DDMA and PDMA.
Develop damage and loss database for post disaster activities and available at DEOCs and Taluka level TDMCs.	X	X	X	DDMA, Revenue, TDMCs and District government.
Stockpiling of the relief goods at warehouses.	X	X	X	DDMA, UNO, I/NGOs and CSOs.

6.2. References used for developing the DDMP Thatta

6.2.1. Conclusion

District Disaster Management Plan for District Thatta has been revised after thorough consultation with various government and non-government stakeholders at District and Talukas level. Information for the DDMP were gathered at field level through a succession of in-house discussion and consultative process, including consultative meetings with district government departments, humanitarian agencies, local residents, followed by a consultation workshop at the district level for the identification and verification of hazards and prioritized the possible interventions for the coming 10 years.

Besides secondary data were collected through various sources at national, provincial and district level. The details of the sources used for DDMP are mentioned in the below references.

6.2.2. References

1. National Disaster Risk Management Plan (2012-2022), NDMA Islamabad
2. National Disaster Management Act 2010, NDMA Islamabad
3. National Disaster Risk Management Framework (NDRMF) 2007, NDMA Islamabad
4. National Climate Change Policy 2012, NDMA Islamabad
5. National Disaster Response Plan 2012, NDMA Islamabad
6. National Disaster Risk Reduction (DRR) policy 2013, NDMA Islamabad
7. Disaster Risk Management Plan (DRMP) 2008, PDMA Sindh
8. Monsoon Contingency Plan 2016 Sindh Province, PDMA Sindh
9. District Thatta Contingency Plan 2016, District Thatta
10. Flood Situation Update, 2011, Food & Agriculture Organization (FAO)
11. District Government Flood Damages Data
12. District Census Report 1998, Population Census Organization, Statistics Division, Islamabad
13. Maps modified from NDMA and PMDA Sindh map prepared under multi-hazard risk vulnerability & risk assessment of Sindh Province 2014-15, (WFP, ADPC, NDMP)
14. SIRAT Hazard, Vulnerability Capacity Assessment (HCVA) Thatta 2014
15. Environmental & Social Baseline of Coastal Region of Thatta District Part – 1
16. Pakistan Emergency Situation Analysis, District Thatta 2014
17. Pakistan Social and Living Standard Measurement Survey 2012-13
18. Mouza Statistics of Sindh 2008, Agriculture Census Organization
19. Socioeconomic Study of Badin and Thatta Districts, Sindh, Pakistan
20. Local Adaptation Plan of Action District Thatta
21. <https://en.wikipedia.org/wiki/Thatta#History>
22. <https://en.climate-data.org/location/3579/>



Annexure

Annexure I: Glimpses from the inception and consultation meetings



Meeting with Assistant Director Operations
PDMA Sindh



Meeting with Additional Deputy Commissioner



Meeting with Assistant Commissioner
Ghorabari and K.T. Bunder



Meeting with Health Department



Meeting with Taluka Municipal Administration



Meeting with District Nazim



Meeting with Police Department



Meeting with Agriculture Department



Meeting with Food Department



Meeting with Coastal Development Authority



Meeting with Education Department



Meeting with Fisheries Department



Meeting with Social Welfare Department



Meeting with Taluka Municipal Administration

Annexure II: Glimpses from the consultation meeting held with I/NGOs and CSOs



Meeting with I/NGOs CSO,s and DRR Forum Thatta



Meeting with I/NGOs CSO,s and DRR Forum Thatta



Annexure III: Participant list of the consultation meetings

S.#	Name	Designation	Department
1	Mr. Ajay	Deputy Director Training	PDMA Sindh
2	Mr. ArshidBarqi	ADC / DDMO	ADC /DDMA (Thatta)
3	Mr. Usman Tanveer	Assistant Commissioner	A.C (Ghorabari & K.T. Bunder)
4	Mr. Fida Hussain	S.S.P Thatta	Police
5	Mr. syed Muzaffar Jamil	Inspector	Police
6	Mr. Muhammad Essa	P.A to Chairman	Municipal Nazim, Thatta
7	Engr. Zulfiqar Ali Lashari	Sub Engineer	Taluka Municipal Administration (TMA)
8	Mr. Abdul Majeed Korai	Accounts Officer	TMA
9	Mr. Mehtab Ali Khan	Superintendent	TMA
10	Mr. KhudaBaksh Behram	Deputy Director	Social Welfare
11	Mr. Sarfaraz	Agricultural Officer	Agriculture
12	Mr. Jan Haider	Food Controller	Food
13	Mr. Sai Baksh	Head Clerk	Food
14	Mr. Yasin Hussain Shah	Food Inspector	Food
15	Mr. Arjun	Deputy D.H.O	Health
16	Mr. Muhammad Hassan	D.D.O (Admin)	Health
17	Mr. Khalil ur Rehman	Assistant Director	Fisheries
18	Mr. Kashif Raza	Assistant Engineer	Coastal Management Authority
19	Mr. Naseer Ahmed	District Education Officer	Education
Participants List of I/NGOs and LSOs Meetings			
1	Mr. Fayaz Hussain Shah	Program Coordinator DRM	Malteser International
2	Mr. Imran Jokhio	Project Officer-DRR	Malteser International
3	Mr. Mubashir Hussain	Area Coordinator	Malteser International
4	Mir Muhammad Baloch	RM-PFF & DRR Forum Chairperson	Pakistan Fisherfolk Forum
5	Mr. Khalil -Ur-Rehman	District Secretary	PRC Thatta
6	Mr. Ghulam Rasool Khan	Brighter Lite Pakistan	Zonal Manager Brighter Lite
7	Syed Azhar	Project Officer DRR	Malteser International
8	Mr. Ali Akbar Baloch	DRM Officer	Plan International
9	Mr. Rizwan Jaleel	Project Manager	Church Worldwide Services (CWS)
10	Mr. Ahmad Khan Somroo	Livelihood Specialist	Pakistan FisherFolk Forum
11	Ms. Noreen Hassan	Project Coordinator	NRSP
12	Mr. Muhammad Alim Memon	District Project Officer	Handicap International
13	Mr. Lala Neel Ambar	DRR Advisor	Handicap International
14	Mr. Kalsoom Jhoyo	Project Officer	Handicap International
15	Mr. Nadeem Mansoor	Chief Executive Officer	Action for human Development (AHD)

Annexure IV: Glimpses from the consultation workshop



Annexure V: Participants list of the consultation workshop

S.N#	Name	Department /Organization	Designation	Contact Details
1	Mr. Fayaz Hussain Shah	Malteser International	Program Coordinator DRR	0345 8508438
2	Mubashir Hassan	Malteser International	Area Coordinator	0300 -0338612
3	Imran Khan Jokhio	Malteser International	Project officer-DRR	0334 -2050835
4	Ms. FarzanaSoomro	Pakistan Fisherfolk Forum	Trainer	03213519781
5	Ali Akbar	Plan International	DRR officer	0334 2201590
6	Dr. Abdul Majid Bhuto	Livestock Department	Deputy Director	0344 3915908
7	Mr. Mohd Mithol	Livestock Department	Stock Assistant	0346 3375277
8	Mr. Khalil Ur Rehman	Pakistan Red Crescent Society	District Secretary	0321 2656599
9	Mr. Muhammad Alim Memon	National Rural Support Program	District project officer	0303 3336137
10	Mr. Zakir Husain Rajpar	National Rural Support Program	Training officer	0305 3594454
11	Mr. Habib Ullah Rantho	Alast	Chief Executive Officer	0321 3298179
12	Mr. Ibrahim Hejab	WHDT CSN Thatta	Coordinator	0321 3277939
13	Mr. Sarfaraz	Agriculture Extension	Agriculture Officer	0321 3713293
14	Ms. Anum	Malteser International	DRR officer	0300 -0338615
15	Mr. Arshad	CWS-Asia	Program Coordinator	0345 4996137
16	Mr. Mir Muhammad Baloch	Pakistan Fisherfolk Forum	Regional Manager	0300 0735296
17	Mr. Ahmad Khan Sumro	Pakistan Fisherfolk Forum	Livestock & value chain specialist	0300 3144765
18	Mr. Ghulam Mustafa Khudai	Education Department	Focal person	0333 2565966
19	Mr. Rehmatullah Chutto	MERF Thatta	GRM Associate	0321 2214700
20	Eng. Kashif	Coastal Development Authority	District Engineer	0333 2525262
21	Mr. Mehtab Ali Khan	Municipal Committee Thatta	Assistant	0324 2303385
22	Mr. Mehrab Khan	Municipal Committee Thatta	Assistant M &E Thatta	0321 2532154
23	Mr. Abdul Star	Irrigation Department	Assistant Engineer	0321 2467274
24	Mr. Ghulam Mustafa Memon	Irrigation Department	Sub-Engineer	0321 3063297
25	Mr. A. Ghafar Shah	Revenue Department	Assistant Commissioner Ghorabari & Keti Bunder	0315 2022802
26	Mr. Hajiz Solangi	Press Club Thatta	Member of Press Club	0346 3716151

S.N#	Name	Department /Organization	Designation	Contact Details
27	Mr. Jhon	Food Department	Assistant Food Controller	0346-3716513
28	Ms. Tanzeela Memon	Save the children	Assist Nutrition officer	0313-3599677
29	Mr. Ghulam Ali Khan	Save the children	Health coordinator	Nil
30	Mr. Imdad Hussain Qureshi	Education Department	Focal person to DEO(ESHS)Thatta	0321-3018152
31	Dr. Khalid	Health Department Thatta	Deputy District Health Officer	0333 2092692
32	Dr. Arjun Dev	Health Department Thatta	ADHO Thatta	0332 2120378
33	Syed Habib Ali Shah	Police Department	DSP HQ Thatta	0301 3991091
34	Syed Muzafar Jan	Police Department	Police Inspector DIB Thatta	0321 2258601
35	Mr. Nazar Begum	Education Department	DEO primary	0312 3788165
36	Mr. Jhangir	Education Department	Assistant Clerk UC	0321 3436145
37	Mr. Muhammad Memon	Handicap International	Project Manager	0346 8561309
38	Mr. Niaz Ahmad	Social welfare	Deputy Director	0333 2591181
39	Mr. K.B Behrain	Social welfare Department	Deputy Director	0321-3715351
40	Mr. Muhammad Naseer Ahmad Memon	Education Department	DEO (ESHS)Thatta	0336 0236288
41	Mr. Siraj Ahmad	Education Secondary	DEO Primary	Nil
42	Mr. Jan Muhammad	Junior clerk	Local GOVT	0321 3711352

Annexure VI: List of vulnerable union councils Identified by the district government³⁷

District	Talukas	Vulnerable Union Councils	At Risk Population in Katcha Areas
Thatta (254,365)	Thatta	Jhurruck	17,755
		Jampir	20,614
		Sonda	17,897
		Chuto Chand	21,264
		KalanKot	1,867
		Thatta 1	20,002
		Domani	19,657
	Keti Bunder	Keti Bander	25,700
	Ghorabari	Khan	22,008
		Kotri Allah Rakhio Shah	19,309
		Mahar	21,490
		Udassi	21,136

37. Sindh Provincial Contingency Plan 2016

Annexure VII: Key Stakeholders and their Role in Disaster Management

This section gives a brief description of the significant disaster management activities that the line department, local administration, institution and other district stakeholders are expecting to execute at three different stages known as pre, during and post disaster management. The list of functions given below is only an indicative one. The DDMA would provide technical guidance and support to stakeholders in carrying out their functions. The important disaster management activities that the following line departments, local government institutions and other stakeholder in Thatta district are expected to perform at three commonly-known stages as pre, during and post disaster management.

District Disaster Management Authority (DDMA)³⁸

Pre Disaster	During Disaster	Post Disaster
<ul style="list-style-type: none"> • Prepare a Disaster Management Plan, including district response and contingency plan for the whole district. • Ensure District Emergency Operation Centre (DEOC) has been equipped with all necessary gadgets and operationalized. • Coordinate, ensure and monitor the implementation of the National and Provincial level policies, National, Provincial and District level plans. • Ensure that the multi hazard, vulnerabilities and risk assessment have been done and maps have been developed and prioritized risk prone areas in the district are identified. • Disaster risk reduction measures are undertaken by the government departments, local authorities and the general public. Ensure proposed DRR measures are focused on highly vulnerable and 	<ul style="list-style-type: none"> • Activate the District Emergency Operation Centre (DEOC) as early as possible after a disaster occurs. • Carry out rapid damage and needs assessment and develop a flash report for assistance and report to PDMA and other relevant stakeholders. • Close liaison with the Provincial Emergency Operation Centre (PEOC) and update with damage and needs. • Mobilize UC, village level DM Committees, PRC, non-governmental organizations and voluntary social-welfare institutions for effective response. Extreme care to evacuate or take care of the highly vulnerable and socially excluded groups. • Provide shelter, food, drinking water and essential provisions, healthcare and services establish emergency communication systems in the affected area and at evacuation/shelter places 	<ul style="list-style-type: none"> • Support PDMA for carrying out detail damage and needs assessment and develop the detail report. • Close liaison with the PEOC and UN clusters for needs assessment and effective response. • Continue and monitor early recovery and rehabilitation activities with the support of I/NGOs, UN Clusters and other stakeholders. • Facilitate specialized and technical trainings of the government stakeholders and I/NGOs for reconstruction and recovery process. • Build the capacities by providing trainings to masons, carpenters etc. for the reconstruction and recovery of the physical infrastructures. • Review and update development plans prepared by the departments of the government at the district level, statutory authorities or local authorities with a view

38. National Disaster Management Framework, NDMA 2007

Pre Disaster	During Disaster	Post Disaster
<p>socially excluded groups.</p> <ul style="list-style-type: none"> • Provide guidelines, prepare, review and update district level response and contingency plans. • Ensure that the guidelines for prevention, mitigation, preparedness and response measures as laid down by the Planning Commission, NDMA and the PDMA are followed by all government departments and the local authorities. The guidelines should also propose measures for highly vulnerable and socially excluded groups. • Give directions to different department/authorities at the district and local level to take such other DRR measures for the prevention or mitigation of disasters as may be necessary. • Lay down guidelines for preparation of disaster management plans by the government departments at the district level and local authorities. • Monitor implementation of the disaster management plans prepared by the government departments and local authorities. Ensure that disaster management plan have also suggested and implement structural adjustments in construction for socially excluded groups. • Organize and coordinate specialized DRR related training programs for different levels of officers, 	<ul style="list-style-type: none"> • Control and restrict vehicular traffic to, from and within, the vulnerable or affected area. • Control and restrict the entry of any person into, his movement within and departure from, a vulnerable or affected area. • Remove debris, conduct search and carry out rescue. 	<ul style="list-style-type: none"> • make necessary provisions therein for prevention of disaster or mitigation. • Hire the services of experts and consultants in the relevant fields of recovery and rehabilitation to advise and assist as it may deem necessary. • Review the DDMP and Contingency Plans in light of lesson learn and improve the response mechanism.

Pre Disaster	During Disaster	Post Disaster
<p>employees and volunteer rescue workers in the district.</p> <ul style="list-style-type: none"> • Facilitate community level DRR trainings and awareness programs for prevention of disaster or mitigated with the support of local authorities, government and non-government organizations. • Set up, maintain, review and upgrade the mechanism for multi hazard early warnings, dissemination and education of proper information to public. • Co-ordinate with, and give guidelines to, local authorities in the district to ensure that post-disaster management activities in the district are carried out promptly and effectively. • Review development plans prepared by the government departments, statutory or local authorities with a view that DRR has been integrated into the development activities and projects of the plan. • Identify buildings and places which could, in the event of a disaster situation, be used as relief centers or camps and make arrangements for water, sanitation and hygiene in such buildings or places. • Establish stockpiles of relief and rescue materials or ensure preparedness to make such materials available at a short notice 		

Pre Disaster	During Disaster	Post Disaster
<p>during any emergency or disaster.</p> <ul style="list-style-type: none"> • Encourage the involvement of Pakistan Red Crescent Societies, non-governmental organizations and voluntary social welfare institutions working at the grass roots level for disaster management. • Develop a pool of Master Trainers and Community Trainers in Community Based DRR in order to develop pools of trained volunteers for effective emergency response with the support of Civil Defence, PRC and non-governmental organizations working at the grassroots level for disaster management. • Take support of the Civil Defence, PRC and non-governmental organizations to establish UC and Village level DRR Committees and ensure that they are properly trained and selection criteria for the committees are in place. • Develop a pool of volunteers and their database for effective emergency response with the support of PRCS, non-governmental organizations and voluntary social welfare institutions working at the grassroots level for disaster management. • Ensure communication systems are in order and disaster management drills are carried out periodically. 		

Pre Disaster	During Disaster	Post Disaster
<ul style="list-style-type: none"> • Give directions for the functionality and maintenance of the resources available to any department of the Government and the local authority in the district. • Arrange commemoration days of important past disaster events and use public gathering platform like sports, cultural, recreational festivals, fairs and shows. • Establish stockpiles of relief and rescue materials or ensure preparedness to make such materials available at a short notice during any emergency or disaster. • Hire the services of experts and consultants in the relevant fields to advise and assist as it may deem necessary. • Ensure that the non-governmental organizations carry out their activities in an equitable and non-discriminatory manner. 		

Taluka Municipal Administration (TMA)

Pre Disaster	During Disaster	Post Disaster
<ul style="list-style-type: none"> • Give technical inputs and approve bylaws related to disaster resilience practices in local context through Taluka councils. • Suggest, prioritize and approved budgetary requirements for disaster mitigation practices. • Integrate DRR in short and long term development plans within the municipality/Taluka with a focus on embedding proper planning code and suggesting DRR measures for the highly vulnerable and socially excluded groups. • Ensure that the multi hazard, vulnerabilities and risk assessment have been done and maps have been developed and prioritized risk prone areas in the in the municipality/Taluka are identified. • Land use planning and zoning within the municipality by preparing master plans while keeping the multi hazard context of the municipality and Taluka in mind. • Ensure the implementation of bylaws related to encroachment at hazardous places, building codes, land use planning and zonation etc. 	<ul style="list-style-type: none"> • Coordinate with the village and neighborhood councils in case of emergency in order to get quick information about the severity and extent of a disaster impact and report it to the DDMA, PDMA and higher district and provincial level authorities. • Dissolve disputes related to private properties for public use like footpaths, tracks, streets and roads, originating from the disruption due to disaster. In a way grounds should be made to run the response and relief activities smoothly. • Make arrangements for sanitation, cleanliness, disposal of garbage and carcasses, drainage and sewerage system caused and disrupted by a disastrous event. • Continue search and rescue activities and removal of debris. • Ensure health facilities are operationalized and roads are open to have access to health services during the disaster. • Facilitate formation of voluntary organizations for assistance and help of the victims alongside of the international and national humanitarian agencies. 	<ul style="list-style-type: none"> • Mobilize community for maintaining public ways, public streets, culverts, bridges and public buildings, de-silting of canals and other development activities. • Facilitate the formation of co-operatives for improving economic returns and reduction of poverty and vulnerability. • Dispose of debris from street and houses and promote cleanliness and encourage plantation of trees in public places. • Support in providing accurate, detailed and information useful for preparing detail damages and needs assessment reports by the DDMA/PDMA etc.

Pre Disaster	During Disaster	Post Disaster
<ul style="list-style-type: none"> • Ensure the implementation of fines and penalties in place, related to DRR in the municipality/Taluka. • Identify evacuation/shelter places to face any disaster/emergency. • Arrange commemoration days of important past disaster events and use public gathering platform like sports, cultural, recreational festivals, fairs and shows. • Prepare contingency plan for the TMA and organize regular drill/simulation exercises. • Establish stockpiles of relief and rescue materials or ensure preparedness to make such materials available at a short notice during any emergency or disaster. • Identified the frequent disrupted sites of sewerages, water supply and sanitation and hence highlighted for durable solutions. 	<ul style="list-style-type: none"> • Conduct rapid damages and needs assessment of the survivors in order to start relief activities accordingly. Prepare flashes appeal and report to DDMA and PDMA and other relevant higher level authorities. • Report cases of handicapped, destitute and socially excluded groups to district government and higher authorities in order to streamline their special needs in relief and response operation. 	

Agriculture Department

Pre Disaster	During Disaster	Post Disaster
<ul style="list-style-type: none"> • Keeping in mind the most significant hazards in the district, undertake a field exercise of risk assessment to identify vulnerabilities and risks regarding food security, agriculture activities such as cropping patterns in the face of climate change, and the livestock/dairy/poultry. This exercise should also look into the possibility of likely damages / losses which might occur in the wake of any disaster to all the sub-sectors of the agriculture department. The outcome of the exercise will be an informed and practical DRR plan of the department. • Establish and maintain farmers' groups to raise their level of awareness with regards to issues falling under the overall mandate of the department. The farmers' group may also be trained on basic disaster preparedness and response skills. They can potentially become extremely useful during disaster situations in their respective areas. • Prepare departmental contingency plan and organize regular drill/simulation exercises. • Maintain emergency stock of vaccination, fodder and seeds etc. 	<ul style="list-style-type: none"> • Immediately, start interacting with DDMA/DC office for coordinating emergency response activities. • Make available all the technical and material resources to be made part of the relief effort. • Carryout agriculture sectors damages/losses and needs assessment and prepares flash report for response. • Help other relevant departments in establishing relief camps in safe places. • Arrange feed and fodder for surviving livestock. 	<ul style="list-style-type: none"> • Prepare detail report of agriculture sector damages/losses and needs and submit it to DDMA/DC office for onwards transmission to PDMA/NDMA. • Repair and rehabilitation of water sources to ensure that agriculture activities are resumed as early as possible. • Livestock vaccination. • Ensure foods and fodders availability. • Provision of seeds, fertilizers and other agro-inputs/implements to farmers as disaster early recovery support. • Document lessons learned and revise the departmental contingency and DRR plan accordingly.

Pre Disaster	During Disaster	Post Disaster
<ul style="list-style-type: none"> • Creating community seed banks at the Union Council level is a very viable option to support the small farmers with minimum seed requirements after any disaster to enable them to resume and regenerate agriculture based livelihood activities. • Mass awareness regarding epidemics and diseases of livestock, poultry and crops. Regular vaccination is an effective tool to prevent diseases. • Regular surveillance of water sources, which may be damaged or cause flooding during monsoon. • Closely coordinating with Pakistan Meteorological Department and the media to ensure that early warning messages are appropriately relayed / disseminated to hazard prone communities. It will help people to plan for sowing/planting and harvesting crops accordingly. • Arrange different trainings on impact of global warming and climate change and adopting of agriculture crops and enhance the productivity for the farmers. • Promote adoption of flood and drought resilient crops through research and dissemination to farmers with the help of agricultural extension workers. 		

Irrigation Department

Pre Disaster	During Disaster	Post Disaster
<ul style="list-style-type: none"> • Equip irrigation department to mitigate floods and droughts with technical & managerial capacity and modern gadgetry and practices. • Ensure development & maintenance of flood protection systems in the pre-flood season. • Inspect and ensure the proper functioning of all the irrigation installations in the district. • Identify the most vulnerable points of irrigation canals & headwork's in the district and takes corrective measures. • Forge inter and intra departmental coordination mechanism, including coordination, close to DC, DDMA, NGOs and PMD District Office and share the information/updates about emergency with all the stakeholders. • Demonstrate/assist & train local communities facing localized or regional droughts on cheaper rainwater harvesting and storage techniques. • Educate and train the drought affected communities on water use efficiency techniques/good irrigation practices. 	<ul style="list-style-type: none"> • Ensure establishment and operationalization of Flood Control Cell (FCC) in proper order. • Keep the liaison with field staff, Provincial Irrigation Department and district authorities • Institutionalize regular patrolling of vulnerable points/ irrigation canals and breach sites to warn the potential victims on time. • Create and disseminate flood situation reports among the stakeholders. 	<ul style="list-style-type: none"> • Do the stock taking exercise of disaster affected areas and examines all the existing flood protection systems like protection walls, spurs studs and head works of the irrigation canals. • Estimate and collect damages data and do need assessment in terms of repair/maintenance and disseminate the information to the relevant stakeholders for securing needed resources. • Coordinate the repair work of the damaged irrigation infrastructures. • Prepare a sectoral specific recovery plan.

Pre Disaster	During Disaster	Post Disaster
<ul style="list-style-type: none"> • To establish a mechanism of early warning transmission, up and downstream across communities and establish special flood warning centers at UC level, with support of district administration and CSOs. • Develop and regularly review the district level plans on water management. • Prepare departmental contingency plan and circulate it among stakeholders before onset of Monsoon. • Identify and discourage encroachment(s) of various waterways, with the help of other district authorities. • Closely monitor discharge rates in the major water bodies, passing through the district and for this purpose and optimize the functionality of the installed gauges. • Arrange protection material such as sandbags, stones, machinery, human resources and other material to be used at the time of need especially before the onset of moon soon. 		

Revenue Department

Pre Disaster	During Disaster	Post Disaster
<ul style="list-style-type: none"> • Being one of the key district departments, Revenue has to do a lot with disaster mitigation, preparedness and response. Keeping this in mind, carry out a detailed multi hazard vulnerability, capacity and risk assessment. It will help in identifying and prioritizing the most vulnerable or hazard prone areas for concerted efforts. Risk profiling of highly vulnerable and socially excluded groups should be given priority. • Prepare a consolidated Departmental Contingency / DRM Plan based on the review of department specific plans. • Inform the office of the DC and DDMA about the available financial resources against the Contingency / DRM Plan and present a clear picture of gaps to be filled in either by the district government's own funds or by the provincial funds through respective PDMA. • Prepare and regularly update the contact list of Patwaris (revenue officials) to ensure that they are contacted and deployed in any looming emergency. • Capacity building of the revenue official in DRR and formal training on damages and needs assessment would make them a very useful resource for accurate data collection for the district. • Regular liaison with the UC and village level DM committees and volunteers in order to take their help during any emergency. 	<ul style="list-style-type: none"> • Wherever and whenever required, establish the evacuation/shelter places in coordination with other line departments, NGOs and philanthropists and evacuate the affected people with priority to the highly vulnerable and socially excluded groups. • Keep track of in-coming relief support, develop a relief distribution mechanism, and start providing assistance to disaster affected population. • Coordinate with the District Finance & Planning department to ensure timely release of required funds through the DC's office. • Collect, verify and disseminate information about relief assistance being provided by the government and non-governmental actors. • Assess relief needs on a daily basis and prioritize them to meet the most urgent needs of the affected people. It is of vital importance to prepare a sheet of required assistance on a weekly basis and gradually make it a fortnightly and then monthly exercise. • Assess the overall situation and determine the likely time frame of the evacuation/shelter places population return to their homes. 	<ul style="list-style-type: none"> • Start carrying out detail damages and losses and support DC and DDMA offices for detail report. This can be done in two ways: a) revenue officials make field visits and find out physically the exact nature and extent of damages and losses by filling in templates designed specifically for this very purpose; b) collect and collate department-specific information on damages and losses. • Before the Early Recovery and Rehabilitation activities take place, identify and prioritize areas of interventions by the government, non-governmental actors and community based organizations. Inform national and international NGOs and the UN agencies about the district priorities and facilitate their work. • Regularly monitor and supervise Early Recovery and Rehabilitation activities. • Prepare and provide a progress update to the district administration and other relevant stakeholders including the local media. • Prepare budgetary estimates for reconstruction activities if the damages are massive.

Health Department

Pre Disaster	During Disaster	Post Disaster
<ul style="list-style-type: none"> • Develop a Health Risk Management Plan for the whole district to prevent or mitigate communicable diseases, injuries following mass causality accidents and disasters with relation to the department's mandate and assets. • Undertake multi hazard, vulnerability and risk assessment for health facilities and services and surroundings and propose allocation of funds in the annual development budget. Also, conduct hazard and risk based mapping of all health care facilities, including vulnerability assessment (infrastructure and organizational setup) and integrate hazard resilience measures. • During the construction of a new health facility, proper designing keeping in view the need of People With Disabilities (PWD) should be incorporated in the structure. • Integrate disaster preparedness and response capacities into all existing and future health programs at the district level. • Devise strategies for community involvement in all aspects of emergency preparedness, response and recovery with regard to the health sector. A pool of Community Health Workers (CHWs) should be established or strengthen 	<ul style="list-style-type: none"> • Establish District Emergency Health Operation Centre to ensure better coordination and mobilization in a disaster situation. • Set-up medical camps and mobilize emergency health teams, including mobile hospitals, to be deployed in the event of a disaster and start providing immediate emergency medical assistance. • Mobilize all available health resources and possible assets for emergency interventions. • Inform the DC and DDMA if external support is needed in terms of doctors, paramedics, or medicines/surgical equipment's from other districts or from the provincial government. • Provide daily update on health response and highlight gaps/needs accordingly. • Keep the disaster-hit communities posted about any likelihood of epidemics and the precautionary measures. CHWs can be mobilized to gather data and report. This is very important to prevent the secondary wave of death in affected areas. • Guide and facilitate the non-governmental organizations in addressing the priority health needs in the most 	<ul style="list-style-type: none"> • Carrying out detail damages and loss assessment in the health sector. • Regular and vigilant health risks monitoring is immensely important to deal with post-disaster diseases / epidemics. • With available resources, start repairing or retrofitting of the damaged health infrastructure in order to cater health needs of the affected population during early recovery and rehabilitation stages. • It is important for the health officials to make sure that the drinking water is not contaminated. Similarly, proper dumping of hospital waste is necessary to be taken care of. • Regularly monitor and supervise early recovery and rehabilitation activities in the health sector.

Pre Disaster	During Disaster	Post Disaster
<p>and can be linked to the UC and Village level DM Committees.</p> <ul style="list-style-type: none"> Health related data should be maintained and updated on priority basis along with data of at risk communities and elements are available digitally. Identify safe evacuation place in the health facilities and conduct regular emergency response and evacuation drills with all health officials. With the support of DDMA, CHWs along with UCDMC and VDMC can be engaged to collect at risk population data, especially marginalized and socially excluded groups can be identified. 	<p>and can be linked to the UC and Village level DM Committees.</p> <ul style="list-style-type: none"> Health related data should be maintained and updated on priority basis along with data of at risk communities and elements are available digitally. Identify safe evacuation place in the health facilities and conduct regular emergency response and evacuation drills with all health officials. With the support of DDMA, CHWs along with UCDMC and VDMC can be engaged to collect at risk population data, especially marginalized and socially excluded groups can be identified. 	

Education Department

Pre Disaster	During Disaster	Post Disaster
<ul style="list-style-type: none"> Conduct MHVRA for all educational facilities, map all the educational facilities and identify structural vulnerabilities such as hazard-prone location, dilapidated condition, risks involved, and other secondary threats that may cause severe problems with educational facilities in case of a disaster. During the construction of new school buildings or any other educational facility, proper designing keeping in view the need of People With Disabilities (PWD) should be incorporated in the structure. 	<ul style="list-style-type: none"> Mobilize teachers and student volunteers to assist in the search & rescue operations to be followed by setting-up emergency evacuation and relief camps at already identified educational facilities. In case of flood, inform teachers of those schools where the water can probably hit the school building and cause damages. This information will help teachers to take any emergency preparedness measures with support from local communities. 	<ul style="list-style-type: none"> Undertake a detailed assessment of damages inflicted by the disaster to the educational facilities. On the basis of this report, determine short, medium and long-term needs of the education sector in the district. Plan and provide provisional assistance for education after a disaster to ensure continuity of learning. Rehabilitation and restoration of damaged educational facilities should be given high priority. PTC can be an effective bridge or communication channel for

Pre Disaster	During Disaster	Post Disaster
<ul style="list-style-type: none"> • Information about the existing hazards and risks in the district and the mitigation measures can be compiled in simple language, and share it with teachers and students at all levels (primary & secondary schools, colleges). The ultimate objective should be to incorporate inclusive DRR into school curriculum. • Prepare Emergency Response Plan and DRR Plan for Educational Facilities and arrange regular drills and exercises during non-disaster phase. • Gather information about I/NGOs working in the district in the education sector and make sure they mainstream DRR aspect into their project activities. • Identify educational facilities that can be used as temporary evacuation centers for displaced population during or after any disaster. It is important that the identified facilities have water, proper sanitation and latrine facilities. • Engage active student through Girls Guide, Scout Teams, and Parent Teacher Council (PTC) to conduct regular trainings on emergency response management for students, teachers and parents. 	<ul style="list-style-type: none"> • Conduct preliminary damages and needs assessment and submit flash reports to higher authorities, DDMA and DC office. • Temporary shelters in the form of the school's buildings can be provided for displaced population during a disaster, having water supply and latrine facilities available mostly in the buildings. Teachers can be used as valuable working force for smoothly running of the emergency operating centers established at evacuation sites. 	<p>long term rehabilitation and reconstruction activities.</p> <ul style="list-style-type: none"> • Nonstructural activities including preparedness, trainings, drills, awareness campaign and celebration of the commemoration day in the schools should be continued.

Pre Disaster	During Disaster	Post Disaster
<ul style="list-style-type: none"> • Identify safe evacuation place in the school and in collaboration with other actors such as PTC, Civil Defense and I/NGOs, organize regular emergency response and evacuation drills with students and teachers. • Promote the spirit of volunteerism amongst students through awareness raising and training sessions so that they become a useful resource for local communities in times of disasters. • Build capacities of teachers in a way that they are able to prepare and implement a disaster response plan for their respective educational facility. • Educational facilities related data should be maintained and updated on a regular basis along with data about those who are more vulnerable that include children under age of 10 and special persons. • Teachers can be used for mass awareness and capacity building of the vulnerable groups through education & trainings and can disseminate messages by using students as a medium. 		

Finance & Planning Department

Pre Disaster	During Disaster	Post Disaster
<ul style="list-style-type: none"> • Assess available resources and suggest proportionate allocation of funds to each district department for DRM-related activities. • Advise departments about resource mobilization for their proposed DRM activities. • In line with the district contingency plan, prepare budget estimates that the each department may require in a disaster situation. • If the required amount of funds exceeds the available resources, prepare budget estimates for the provincial government so that it provides the requested funds. Such request may be forwarded to the PDMA through DC's office. 	<ul style="list-style-type: none"> • Gather statistical data regarding damages to different sectors and the needs vis-à-vis response, early recovery, rehabilitation and reconstruction. • Explore multiple options for required resources to meet the needs to a reasonable extent. • Ensure timely allocation of fund to the affected area, if additional funds are required, can be arranged through proper channel. • Develop a detailed budget plan for disaster recovery, rehabilitation and reconstruction activities. 	<ul style="list-style-type: none"> • Provide requisite financial resources to district departments for the implementation of their department-specific post disaster activities. • Monitor and evaluate utilization of funds by relevant departments on disaster risk management.

Civil Defense Department

Pre Disaster	During Disaster	Post Disaster
<ul style="list-style-type: none"> • Render First Aid, fire safety and rescue trainings to communities, individuals and organizations in peacetime. • Develop and emergency evacuation plan and conduct regular drills and exercises. • Create community awareness of public safety. • Recruit/induct operational staff for search and rescue teams with required specialized skills and equipment. • Ensure provision of trained rescue workers / Razakars and First Aid staff. • Educate and train volunteers on DRR, emergency response management, including first aid, Search and rescue, emergency evacuations and protection procedures against poisonous gases, chemical/biological/radiological explosions or attack. • Participate in emergency drills with other stakeholders. • The national assembly has passed a resolution about the inclusion of civil defense training for the students for 9th & 10th class. The trainings can be added as compulsory for the student securing 10 Marks as additional to their normal marks. 	<ul style="list-style-type: none"> • Undertake search & rescue activities immediately after a disaster. To do it in more efficient manners, coordinate with other district departments in order to reach to the needy and more appropriate place. • Render first aid to injured persons and transport them to nearest hospitals/dispensaries. • Ensure evacuation from damaged buildings/structures, including demolition of damaged structures to avoid further loss of life and properties. • Assist in debris clearance and restoration of essential services to the affected buildings. • Search and defuse unexploded bombs in the affected areas. • Work with the Fire Brigade in rescue and first aid operations related to fire and other rescue incidents. 	<ul style="list-style-type: none"> • On the basis of the response activities that performed, make a detailed assessment of the capacities of the department and identify gaps and requirements. • Prepare a plan of action for the department and start resource mobilization accordingly.

Police Department

Pre Disaster	During Disaster	Post Disaster
<ul style="list-style-type: none"> • Prepare details of inventory available at each police station that may be used during any disaster or emergency. • Prepare and update regularly the contact information of your staff, and always make sure that the main phone exchange and the wireless system work properly. • Prepare Contingency and DRR plan for the department. • Working with the Pakistan Meteorological Department and DC office, support in dissemination of warning to the affected communities. • Support District Government Authorities in the process of evacuation to safer places. 	<ul style="list-style-type: none"> • Ensure law and order during any disaster situation in the affected areas. • Ensure security measures at evacuation points, in evacuating areas, at relief centers and godowns. • Provide assistance in emergency warning, rescue, relief and evacuation operation. • Ensure that over-loaded trucks are not coming/going to disaster affected areas. • Divert traffic where necessary to keep the emergency relief operations going smoothly. • Ensure security of humanitarian workers who perform duties after any disaster. • Prevent harassment of women and children during any emergency. 	<ul style="list-style-type: none"> • Keep order and prevent obstruction on public places. • Aid and cooperate with other agencies for the prevention of destruction of public property by violence, fire or natural calamities. • Provide assistance to victims of road accidents. • Protect life and property of citizens. • Preserve and promote public peace.

Social Welfare Department

Pre Disaster	During Disaster	Post Disaster
<ul style="list-style-type: none"> • Develop disaster risk management plan and Contingency Plan with regards to the mandate of the department. • Raise awareness of staff of the department about special vulnerabilities and capacities of women and children in relation to disasters. • Encourage involvement of women and PWDs in disaster risk management activities. 	<ul style="list-style-type: none"> • Facilitate participation of women and PWDs in the management of relief, rehabilitation and reconstruction activities. • Use of the emergency phone number 1121 as helpline for Child protection during a disaster. 	<ul style="list-style-type: none"> • Support post-disaster rehabilitation of livelihoods of women survivors, which is mostly in the informal sector and is ignored many times.

Pre Disaster	During Disaster	Post Disaster
<ul style="list-style-type: none"> Promote awareness amongst women and PWDs in hazard-prone areas about disaster risks and disaster preparedness. Develop capacities of women's, PWDs and Children focused organizations on disaster risk and emergency management. Ensure that needs of women survivors are addressed in post disaster situations during the relief rehabilitation and reconstruction phases. Properly plan and provide shelter to the affected women, beggars at DarulKafala, drug rehabilitation, special education, blind institute, disable registration, child protective and other socially excluded groups. Promote awareness regarding the children's rights. 	<ul style="list-style-type: none"> Provide shelter provision to affected women, support in damages and needs assessment of the affected area, service provision through formal, shelter provision to missing unaccompanied children's. 	<ul style="list-style-type: none"> Support the district government and PDMA for re-unification of missing unaccompanied children, women, PWDs, rehabilitation of families, psychosocial support provision.

Works & Services Department

Pre Disaster	During Disaster	Post Disaster
<ul style="list-style-type: none"> Develop district guidelines for safer construction of government buildings and infrastructure in hazard-prone areas multi hazard approach. Ensure DRR checklist of PC-1 has been seriously implemented in all new schemes. 	<ul style="list-style-type: none"> Send information to other district departments on road conditions, especially regarding blocked or impassable roads after a disaster. Ensure drains the flood water from roads and remove debris from under the bridges for smooth flow of water. 	<ul style="list-style-type: none"> Undertake a detailed assessment of damages of government buildings, roads infrastructure including bridges, culverts, etc.

Pre Disaster	During Disaster	Post Disaster
<ul style="list-style-type: none"> • During the construction of any new buildings, proper designing keeping in view the need of People With Disabilities (PWD) should be incorporated in the structure. • Develop sample designs of government buildings, high-rise buildings and infrastructure (bridges, roads) for safer construction in hazard-prone areas. • Ensure environmental impact assessment studies have been conducted for all new schemes. • Conduct training of builders, contractors and masons on safer construction methods and provide guidance on adopting inclusive DRR measures during the construction. • Monitor construction of government buildings and infrastructure in hazard prone areas to ensure that safer construction techniques are followed. • Incorporate disaster risk assessment in the planning process for construction of new roads and bridges. • Construct, maintain and repair district and rural roads, bridges, tunnels and causeway etc. • Prepare a disaster risk management plan and contingency plan with relation to departments programs and mandate. • Develop guidelines on conduct of damage and loss assessment of infrastructure and government buildings in the wake of a disaster, and conduct assessments after disasters. 	<ul style="list-style-type: none"> • Monitor disaster situation (in case of flood and landslide) with regard to roads and coordinate with other district departments for transporting relief items to the affected areas. 	<ul style="list-style-type: none"> • Prepare a report of damages to be shared with the district and provincial authorities along with budget requirements for the rehabilitation and reconstruction of damaged/destroyed infrastructure.

Public Health Engineering (PHE)

Pre Disaster	During Disaster	Post Disaster
<ul style="list-style-type: none"> • Repair and maintenance of the structure in command areas. • Prepare contingency plan highlighting resources available to the organization. 	<ul style="list-style-type: none"> • Collect damages data and prepare reports for onward submission. 	<ul style="list-style-type: none"> • Rehabilitation of the damaged infrastructure, including protection walls, retaining walls, check dams, water ponds, surface water tanks, land leveling, field terracing, small dams, spurs etc.

Media

Pre Disaster	During Disaster	Post Disaster
<ul style="list-style-type: none"> • Develop understanding with the subject of DRM with help from literature produced by different technical government and non-governmental agencies. To further enhance their capacities, try to find out training and orientation opportunities for media person vis-à-vis DRM. • Look into DRM capacities of the district departments and NGOs operating in the district. It will be very helpful if to identify gaps (preparedness & response) and inform the concerned authorities and hazard prone communities about them. • Keep a close eye on development schemes and assess them with help from technical experts as to what extent such schemes are going to be beneficial for hazard prone communities. • Inform communities about any impending hazard on the basis of information that you may have received from the Met department. This is called early warning dissemination. Correct early warning and its timely dissemination can save lives and property of the hazard prone communities. 	<ul style="list-style-type: none"> • Monitor emergency relief activities and identify gaps and the required needs of the most vulnerable people (elderly, women, children, religious minorities, etc.). • Keep track of the incoming external relief assistance and play a role of a watchdog so that the aid is spent judiciously on disaster victims. • Try to compile success stories of disaster survivors and share their courageous efforts through your newspaper, radio or TV channel. • Besides, identifying gaps and objectively criticizing the response efforts, it is always useful to acknowledge and appreciate the good work of government and non-governmental actors involved in emergency response. 	<ul style="list-style-type: none"> • After any disaster, the most significant part that a media person can play is to gather as much information as possible about damages and losses and the response efforts. It helps the government authorities and other stakeholders to prepare more informed action plans for early recovery and rehabilitation. • Don't forget the disaster survivors after the emergency response phase and continue monitoring early recovery and rehabilitation activities.

Pakistan Army

Pre Disaster	During Disaster	Post Disaster
<ul style="list-style-type: none"> • In consultation with NDMA, PDMA and other line department, identify areas that are most likely to be impacted in case of a disaster. • Prepare a Disaster Response plan and conduct regular drills and exercises. • Accordingly, prepare and upgrade necessary equipment's, manpower and other necessary material to be used / deployed immediately after a disaster. • Conduct regular capacity building programs for soldiers so that they are able to carry out emergency relief activities effectively. • Evacuate people to safer areas and designated evacuation centers before and after a disaster. 	<ul style="list-style-type: none"> • Provide search and rescue services where needed. • Evacuate people to safer areas and evacuation centers to focus on giving priority to women, children and PWDs. • Close liaison with the District Government and Disaster Management Unites and if required to establish emergency relief centers and provide disaster victims with lifesaving food, shelter and health facilities. • Install temporary bridges where appropriate to ensure mobility of affected populations and smooth transportation of relief items. • Provide logistic back-up in terms of trucks, boats, helicopters etc. to the civil administration, if needed. 	<ul style="list-style-type: none"> • Supplement early recovery efforts of civilian administration and the humanitarian community. • Reconstruct / repair roads and bridges at important locations.

Private Sector (NGOs, and Pakistan Red Crescent, etc.)

Pre Disaster	During Disaster	Post Disaster
<ul style="list-style-type: none"> • Develop DM Plans at all levels and share with the DDMA for coordination and implementation. • Mobilize communities and develop local level capacities for early warning, disaster preparedness and response. • Conduct MHVRA at the Taluka/UC/village levels, according to the standard procedure set by the PDMA/NDMA under the supervision and with close coordination with the DDMA. 	<ul style="list-style-type: none"> • Facilitate local authorities in emergency relief operations (sear & rescue, establishment of evacuation/relief camps, food distribution to displaced, provision of health services, etc.). 	<ul style="list-style-type: none"> • Mobilize disaster affected communities for early recovery and rehabilitation efforts.

Pre Disaster	During Disaster	Post Disaster
<ul style="list-style-type: none"> • Provide all necessary trainings, conduct drills/exercises and provide necessary equipment to the DRR committees with the close coordination of the DDMA. • Support DDMA in establishing the Taluka/UC/Village level DM Committees according to the set criteria of the PDMA Sindh. • Participate in disaster risk management activities such as training, public education, damage assessment, rehabilitation and construction projects in hazard prone areas. • Implement programs for community vulnerability reduction; e.g. strengthening livelihoods, safer construction practices, drought mitigation, etc. • The Pakistan Red Crescent Society is to assist the district government in crises, emergencies and disasters. The main activities of the Society are relief work during and after conflict, disaster relief and supplementary health and welfare services, which include a wide range of activities for the less privileged and marginalized people in both urban and rural areas. The Society provides ambulance and search and rescue service at times of emergencies in addition to capacity building of volunteers, CBOs, and district government officials. 	<ul style="list-style-type: none"> • Establish an information management center at evacuation/relief camps with close coordination of the DC office and the DDMA. 	<ul style="list-style-type: none"> • With the support of DRR committees, assess Taluka/UC/Village level damages/losses and needs and contribute it to the district government's data. • Prepare village level early recovery and rehabilitation plans and mobilize resources for their implementation. • Provide emergency livelihood support to communities in terms of providing agriculture inputs, conditional cash grants, etc. • Work on promoting community based disaster risk management.

Annexure VIII: Selected basic definition useful for the District Disaster Management Plan ³⁹

Term	Definition
Adaptation	The adjustment in natural or human systems in response to actual or expected climatic stimuli or their effects, which moderates harm or exploits beneficial opportunities.
Building code	A set of ordinances or regulations and associated standards intended to control aspects of the design, construction, materials, alteration and occupancy of structures that are necessary to ensure human safety and welfare, including resistance to collapse and damage.
Capacity	The combination of all the strengths, attributes and resources available within a community, society or organization that can be used to achieve agreed goals.
Capacity development	The process by which people, organizations and society systematically stimulate and develop their capacities over time to achieve social and economic goals, including through improvement of knowledge, skills, systems, and institutions.
Climate change	(a) The Inter-governmental Panel on Climate Change (IPCC) defines climate change as: “a change in the state of the climate that can be identified (e.g., by using statistical tests) by changes in the mean and/or the variability of its properties, and that persists for an extended period, typically decades or longer. Climate change may be due to natural internal processes or external forcing or to persistent anthropogenic changes in the composition of the atmosphere or in land use”. (b) The United Nations Framework Convention on Climate Change (UNFCCC) defines climate change as “a change of climate which is attributed directly or indirectly to human activity that alters the composition of the global atmosphere and which is in addition to natural climate variability observed over comparable time periods”.
Contingency planning	A management process that analyses specific potential events or emerging situations that might threaten society or the environment and establishes arrangements in advance to enable timely, effective and appropriate responses to such events and situations.
Coping capacity	The ability of people, organizations and systems, using available skills and resources, to face and manage adverse conditions, emergencies or disasters.

39. United Nations International Strategy for Disaster Reduction (UNISDR) Terminology. 2009

Term	Definition
Corrective disaster risk management	Management activities that address and seek to correct or reduce disaster risks which are already present.
Critical facilities	The primary physical structures, technical facilities and systems which are socially, economically or operationally essential to the functioning of a society or community, both in routine circumstances and in the extreme circumstances of an emergency.
Disaster	A serious disruption of the functioning of a community or a society involving widespread human, material, economic or environmental losses and impacts, which exceeds the ability of the affected community or society to cope using its own resources.
Disaster risk	The potential disaster losses, in lives, health status, livelihoods, assets and services, which could occur to a particular community or a society over some specified future time period.
Disaster risk management	The systematic process of using administrative directives, organizations, and operational skills and capacities to implement strategies, policies and improved coping capacities in order to lessen the adverse impacts of hazards and the possibility of disaster.
Disaster risk reduction	The concept and practice of reducing disaster risks through systematic efforts to analyze and manage the causal factors of disasters, including through reduced exposure to hazards, lessened vulnerability of people and property, wise management of land and the environment, and improved preparedness for adverse events.
Disaster risk reduction plan	A document prepared by an authority, sector, organization or enterprise that sets out goals and specific objectives for reducing disaster risks together with related actions to accomplish these objectives.
Early warning system	The set of capacities needed to generate and disseminate timely and meaningful warning information to enable individuals, communities and organizations threatened by a hazard to prepare and to act appropriately and in sufficient time to reduce the possibility of harm or loss.
Emergency management	The organization and management of resources and responsibilities for addressing all aspects of emergencies, in particular preparedness, response and initial recovery steps.
Emergency services	The set of specialized agencies that have specific responsibilities and objectives in serving and protecting people and property in emergency situations.
Exposure	People, property, systems, or other elements present in hazard zones that are thereby subject to potential losses.
Forecast	Definite statement or statistical estimate of the likely occurrence of a future event or conditions for a specific area.

Term	Definition
Hazard	A dangerous phenomenon, substance, human activity or condition that may cause loss of life, injury or other health impacts, property damage, loss of livelihoods and services, social and economic disruption, or environmental damage.
Land-use planning	The process undertaken by public authorities to identify, evaluate and decide on different options for the use of land, including consideration of long term economic, social and environmental objectives and the implications for different communities and interest groups, and the subsequent formulation and promulgation of plans that describe the permitted or acceptable uses.
Mitigation	The lessening or limitation of the adverse impacts of hazards and related disasters.
National Platform for Disaster Risk Reduction	A generic term for national mechanisms for coordination and policy guidance on disaster risk reduction that are multi-sectorial and inter-disciplinary in nature, with public, private and civil society participation involving all concerned entities within a country.
Natural hazard	Natural process or phenomenon that may cause loss of life, injury or other health impacts, property damage, loss of livelihoods and services, social and economic disruption, or environmental damage.
Preparedness	The knowledge and capacities developed by governments, professional response and recovery organizations, communities and individuals to effectively anticipate, respond to, and recover from, the impacts of likely, imminent or current hazard events or conditions.
Prevention	The outright avoidance of adverse impacts of hazards and related disasters.
Prospective disaster risk management	Management activities that address and seek to avoid the development of new or increased disaster risks.
Public awareness	The extent of common knowledge about disaster risks, the factors that lead to disasters and the actions that can be taken individually and collectively to reduce exposure and vulnerability to hazards.
Recovery	The restoration, and improvement where appropriate, of facilities, livelihoods and living conditions of disaster-affected communities, including efforts to reduce disaster risk factors.
Residual risk	The risk that remains in unmanaged form, even when effective disaster risk reduction measures are in place, and for which emergency response and recovery capacities must be maintained.
Resilience	The ability of a system, community or society exposed to hazards to resist, absorb, accommodate to and recover from the effects of a hazard in a timely and efficient manner, including through the preservation and restoration of its essential basic structures and functions.

Term	Definition
Response	The provision of emergency services and public assistance during or immediately after a disaster in order to save lives, reduce health impacts, ensure public safety and meet the basic subsistence needs of the people affected.
Retrofitting	Reinforcement or upgrading of existing structures to become more resistant and resilient to the damaging effects of hazards.
Risk	The combination of the probability of an event and its negative consequences.
Risk assessment	A methodology to determine the nature and extent of risk by analyzing potential hazards and evaluating existing conditions of vulnerability that together could potentially harm exposed people, property, services, livelihoods and the environment on which they depend.
Risk management	The systematic approach and practice of managing uncertainty to minimize potential harm and loss.
Risk transfer	The process of formally or informally shifting the financial consequences of particular risks from one party to another whereby a household, community, enterprise or state authority will obtain resources from the other party after a disaster occurs, in exchange for ongoing or compensatory social or financial benefits provided to that other party.
Socio-natural hazard	The phenomenon of increased occurrence of certain geophysical and hydro meteorological hazard events, such as landslides, flooding, land subsidence and drought that arise from the interaction of natural hazards with overexploited or degraded land and environmental resources.
Structural and non-structural measures	Structural measures: Any physical construction to reduce or avoid possible impacts of hazards, or application of engineering techniques to achieve hazard-resistance and resilience in structures or systems. Non-structural measures: Any measure not involving physical construction that uses knowledge, practice or agreement to reduce risks and impacts, in particular through policies and laws, public awareness raising, training and education.
Sustainable development	Development that meets the needs of the present without compromising the ability of future generations to meet their own needs.
Technological hazards	A hazard originating from technological or industrial conditions, including accidents, dangerous procedures, infrastructure failures or specific human activities, that may cause loss of life, injury, illness or other health impacts, property damage, loss of livelihoods and services, social and economic disruption, or environmental damage.
Vulnerability	The characteristics and circumstances of a community, system or asset that make it susceptible to the damaging effects of a hazard.

