ISLAMIC RELIEF

SIRAT

Hazard, Vulnerability and Capacity Assessment (HCVA)

Report

District Thatta, Sindh

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from the Department for International Development

Risk Assessment Report – District Thatta

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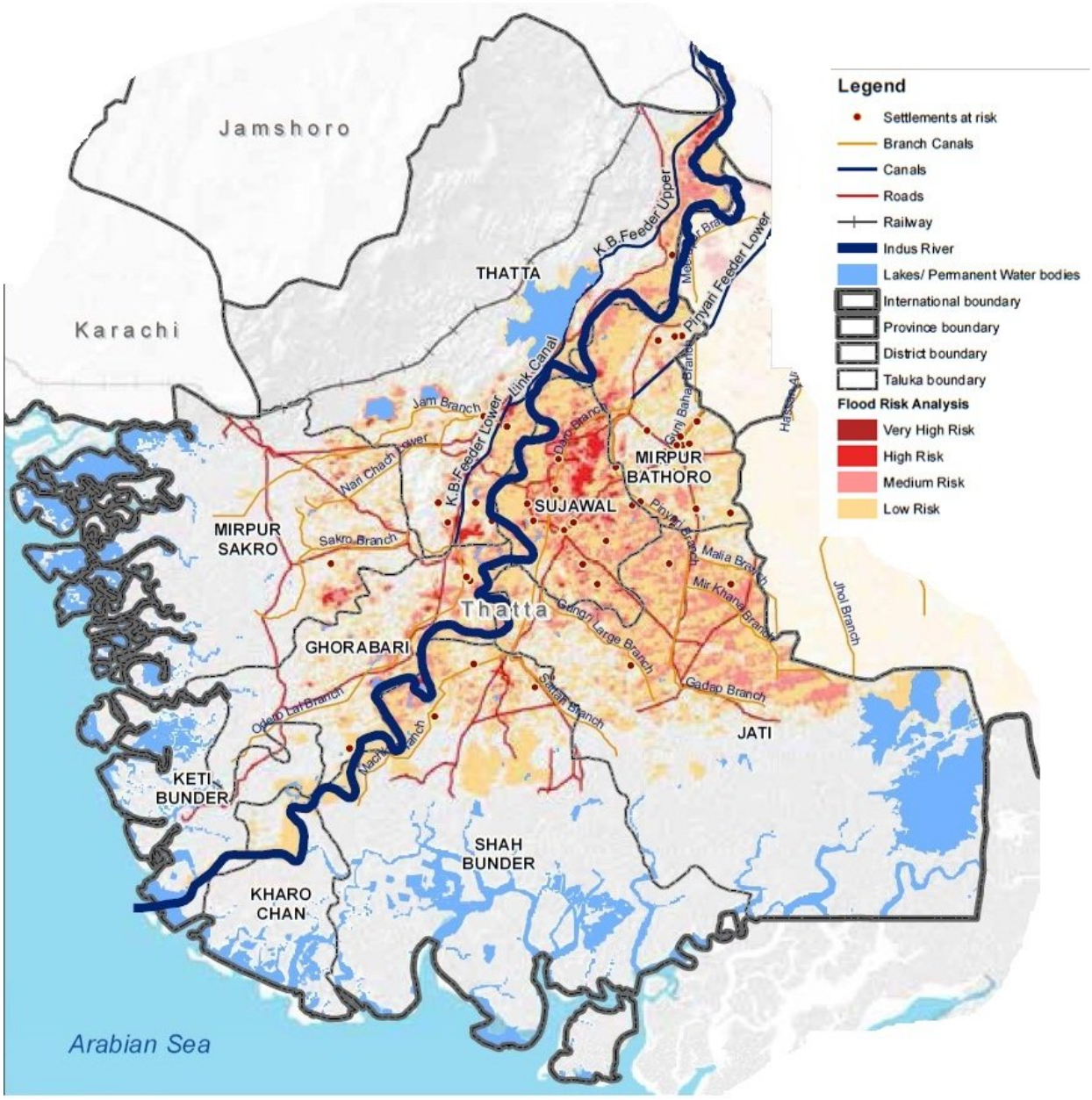
District Thatta Map

Source: IMMAP



DISCLAIMER

Islamic Relief, Pakistan feels delighted to present Hazard, Vulnerability and Capacity Assessment (HVCA) Report of District Thatta. The main ethos behind this is to increase awareness amongst communities, civil society organizations and government and promote culture of building resilience through analysis of existing strengths and weaknesses.

Islamic Relief accepts no liability for any negligent or inaccurate statement or finding in this HVCA report, any omission, or in any situation where the Official Public Records differs from the information provided in this Report, the Official Public Records should take as precedence.

Any statement (includes written, formal or informal) and its recommendations are without prejudice to all parties' obligations. The findings and recommendations in this Report are based on the information provided to Islamic Relief during the Participatory Risk assessment of 100 villages of 4 Union Councils i.e. Jati, Kothi, Gul Muhammad Baran and Keenjhar. However, some data from various sources has also been included as information mentioning their source.

Further the contents of this Report are not confidential can be used as a secondary information provided Islamic Relief will not be held responsible for any use or misuse of information in this report.

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OBJECTIVE

The overall objective of the assessment is to analyze multiple hazard risks to the targeted Union councils located in hazard prone areas along the river Indus and sea to identify areas of improvement for the safer communities The assessment entails to identify structural flaws in buildings, the availability of necessary facilities as per the international standards, functioning and role of VDMCs\ ERTs, means to protect the villages against future disasters and preparedness at the level of Village for proper management.

GEOGRAPHICAL COVERAGE

The areas under assessment are located in districts Thatta, Sindh and have been and are likely to be affected by disasters as they are posed to certain hazards and fall under certain vulnerabilities.

BACKGROUND

The progressive change in Climate has increased the frequency of natural disasters since last five years and has been causing more devastation to life, property and the environment. It has proved more threats to the communities, which are marginalized, ill-informed and resource poor with lesser level resilience. They incur heavier losses directly and indirectly. Direct losses include physical damage to people, to public infrastructure and their housings, and the deterioration of the environment. Indirect losses, on the other hand, are those that affect the people's normalcy, daily working, public services, utilities, mass media and social capital etc.

The occurrence of disasters is not a new phenomena rather nurturing together with human beings simultaneously. It is generally assumed that these disasters are the wrath of nature. However, attribution with nature is unjustifiable when human hands are spoiling the balance of natural eco-system. Generally, natural disasters cannot be prevented but in some cases they can be controlled to a degree.

Despite of having district based setups like District Disaster Management Authority (DDMA) to handle the risk management process; the role of the national as well as provincial government is seemed only reactive-supportive. No doubt the basic responsibility for undertaking rescue, relief and rehabilitation measures in the event of natural disasters lies with the government, civil society and communities, But lack of coordination at both levels has always been a bottleneck to have effective response through ensuring resilience at all levels.

After flood 2010 and 2011 Islamic Relief, Pakistan has taken a step ahead by setting up a component of Disaster Risk Reduction to identify the potential hazards and build capacities of Communities and district government to deal with disasters in future. Currently Islamic Relief

has been implementing a three years integrated project "Sustainable Initiative for Resilience and Transformation (SIRAT)", while focusing on 04 Union councils i.e. Jati, kothi, Keenjhar and Gul Muhammad Baran, of district Thatta (Sajawal). Initially 100 villages are targeted doing Risk Mapping/Hazard Vulnerability Capacity Assessment (HVCA) exercises engaging community Men, women and children. These exercises were aimed to identify the nature, frequency, duration and impact of hazards such as floods, cyclones; heavy rains etc, also to find out social, physical/material, economical, motivational, environmental vulnerabilities and capacities of respective communities against above prevailing hazards. Children and women actively participated in developing village disaster risk management plans where they divided roles to undertake mitigation and preparedness activities.

AREA PROFILE

Thatta, one of the oldest towns in the land of ancient Indus civilization and the district headquarter of Thatta, is situated at 98 Kilo Meter (60 miles) east of Karachi on National Highway. It is situated at 23º 43' to 25º 26' north latitudes and 67º 05' to 68º 45' east longitudes (Thatta District Census Report 1998).

The district is bounded on the north and northwest by Jamshoro district, on the east by Hyderabad, Badin districts and the Indian border, on the south by Run of Kachh area and the Arabian Sea and on the west by city district Karachi. The total area of the district is 17,355 square kilometers that is, 12.32% of the total geographical area of Sindh. River Indus flows downstream the Kotri Barrage through numerous creeks till its delta in Arabian Sea near chach deh wali Mohammad at Keti Bunder. Four tehsils of Thatta district are on the right bank, four are on left bank while one tehsil Kharo Chhan is on both sides of river Indus. The southwestern part is saline and sea-affected due to long coastline of about 107 kilometers as well as shortage of river Indus water, while the southern portion adjoining "Great Run of Kachh" on the border of India is desert like sandy area. The northern part of this district is paramount and known as "Kohistan" connected with Kheerthar range of mountains (Brief on District Thatta, District Government 2006).

The population of Thatta district was 1.113 million in 1998 as compared to 0.761 million in 1981 recording an increase of 46.27 percent over the last few years. If the population continues to grow at its present rate of 2.26 percent per annum, it will double in about 31 years (World Bank 2005). Male to Female ratio of population is (48:52) but the Gender disparity is visible in the social sector and in all the areas of human development.

All targeted union councils i.e. Jati, Kothi, G.M Baran and Keenjhar are most prone to hydro meteorological disasters. Villages are often affected by natural as well as manmade disasters

taking place in Arabian Sea through creeks. Nonetheless, the visible impacts of sea intrusion can be traced around the UC Kothi whereas most of the villages are now submerged.

LIVELIHOOD

Economy

District Thatta get the water from River Indus which flows from here till it meets to the great Arabian Sea in the south, District's economy based on Agriculture and Fishing is the 2nd largest source of income of the people, major portion of the population is related to these means of occupation. Main Crops are Rice, Sugarcane, wheat, Banana and Tomatoes.

Agriculture

The irrigated and productive area lies only in the middle of the district in Sajawal taluka. Though agricultural land is very limited, yet the available cultivable land is very productive in this region. Wheat, rice and sugarcane are major crops of this district. Official statistics about these major crops have shown surprising results i.e., over the last twenty years, area and production of these crops have significantly increased. Area sown and production of food and cash crops in 2008-09 are reported in the Table.

Type	Crop	Area Sown in 2008-09 (000 Hectares)	Production in 2008-09 (000 Tonnes)	Area Sown in 2010-11 (Acres) FAO
Food	Wheat	13.6	42.2	-
	Rice	78.5	203.1	169,511
Cash	Sugarcane	33.2	1629.9	32,508

Source: Crop Area and Production by Districts for 28 Years; 2008-09 *Pakistan Bureau of Statistics (PBS)*

Industry

There are about 30 industrial units established in the district. Apart from the sugar mills, all the larger industrial units are located in Dhabeji and Gharo mouzas adjacent to Karachi. Most of the labour force working in these units is non-local and generally belongs to Karachi. The industrial units of the district include sugar mills (5), textile mills (9), paper mills (2), flour mill (3) salt works, ice factory (2), etc. In addition, crushed stones from the Makli Hills and Kohistan are supplied to the Pakistan Steel Mill and the Thatta Cement Factory.

Livestock

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

Livestock	Population
Cattle	339,105
Buffalo	314,253
Sheep	170,031
Goat	240,920
Camel	11,081
Horse	424
Mule	183
Ass	23,748
Domestic Poultry	510,114

Source: Livestock Census (2006)

Food Security in Thatta

A Preliminary District-level Analysis" was conducted by Pakistan Institute of Development Economics (PIDE) Islamabad, whereas a background Paper for Conference on the "The Environments of the Poor", presented in New delhi on 24-26 Nov, 2010. According to study that District Thatta is an agro-based district with majority of the households engaged in three type of activities likewise; agriculture farming, livestock rearing and non-agriculture activities/casual labour. Among these three types of the households, empirical studies have shown that poverty has been relatively higher in the non-agriculture households, followed by livestock households and small farmers.

All the social indicators including large household size, poor literacy level, higher mortality rate and inadequate infrastructure with poor access to education and health facilities show a higher level of poverty and deprivation in this district. Through the destruction of roads, transport and market infrastructure, the floods had a significant negative impact on commodity market. As a result, the functioning capacity of the markets (transporters, processors, wholesalers and retailers) decreased with upward movement of transaction costs and shortage of food commodities. This phenomenon hindered the socio-economic access of food in the district.

WASH

Due to frequent occurrence of disasters and changing patterns of climate has resulted diversity in living standards of people of Sindh in general and Thatta in particular. Accessibility to potable water has been becoming insufficient to get survive, beside other practices of keeping neat and clean getting disappeared. Following are the few findings recorded during HVCA.

- Increased use of unprotected water sources for drinking across all 4 targeted UCs.
- The drop in access to protected water sources is most pronounced.
- Reduction in the quantity of drinking water available in the district.

- Disrepair and damage to water sources as compared to the pre-flood situation.
- Very few of the households in the HVCA found using some kind of water treatment method.
- Only few of households reported having appropriate, water storage for drinking and irrigation purpose.
- It is observed that adult women and children, who are most likely to be the ones fetching drinking water from distant areas.
- No hygienic practices are promoted in village neither in schools.

HAZARD PROFILE OF THATTA DISTRICT

The disasters affect the economy badly and disrupt development program. Due to poor economic conditions, it is impossible for the poor and vulnerable, living in the village, to cope with the impact of natural disasters. The particular combination of geographical condition of area, unusual characteristic and its topography, makes disasters of even medium level more devastating, whether natural or man-made.

There are different types of disasters. Natural disasters include floods, droughts, famines, earthquakes, cyclones, hurricanes, tornadoes, typhoons, landslides, volcanic eruptions etc. Man-made disasters include chemical accidents, oil spills, radiological accidents, conflicts/wars, mass population displacement or refugee migration, forest fires, water cuts, diversions and mismanagement of rivers through construction of dams, barrages, link-canals, and oceanic pollution etc.

It has only recently dawned upon us to take care of our natural resources and manage them wisely so as to reduce risks that natural and man-made hazards pose to people living today and ensure that future generations are able to live in a care free manner. Emphasizing and reinforcing the environmental concerns of disaster management has become a critical priority, requiring the sound management of natural resources as a tool to prevent disasters or reduce their impacts on people, their homes and livelihoods.

Thatta is vulnerable to a number of natural disasters including frequent cyclones, floods, and droughts. A chronology of disasters over the last five decades reveals that the area has remained in the grip of an uninterrupted cycle of disasters in one form or the other. Cyclones, heavy rainfalls, droughts and floods follow each other with short-lived intervals. However, earthquake seems to be a rare phenomenon proving to be less disastrous in its effects in comparison to other hazards experienced by the communities at risk. Major disasters history as collected and recorded during discussion with community and NGOs is given below in table.

S#	Type of Disaster	Frequency	Severity	Areas affected
1	Cyclones	1964, 1999, 2003, 2004, 2007, 2010, (2014)	High, (Low)	Keti Bander, Shah Bander, Kharochhan, Jati
2	Heavy Rainfall	1973, 1994, 2011&12 (almost every year)	High	Entire district
3	Floods	1976, 1999, 2003, 2006, 2007, 2010, 2011	High	Entire district
4	Earth quack	2001, 2013	Low	Thatta, Sakro, Kharochhan, Jati
5	Tsunami	2004-5	High	Keti Bander, Shah Bander, Kharochhan, Jati
6	Drought	2005, 2013-14	Medium	Thatta
7	Sea Intrusion	Since 1995 and 1999	High	Delta/ Coastal line
8	Water Logging and salinity	Since 1990	High	Delta/ Coastal line

Floods

Flood hazard is the potential for inundation that involves risk to life, health, property, and natural floodplain resources and functions. It is comprised of three elements: severity (magnitude, duration, and extent of flooding), probability of occurrence, and speed of onset of flooding. The 2010 Pakistan Floods caused by unprecedented monsoon rainfall has resulted in disastrous impacts. Considering the number of people affected, the 2010 floods can be tagged as one of the worst natural disasters in the country and is considered as one in a hundred year event.

Impacts of Floods 2010

- The floods of 2010 had a devastating effect on this district as all the 55 union councils, of the 9 talukas, were affected. Most of the sources of livelihood were destroyed for the population, particularly for those whose livelihood was dependent on agriculture and the related industries.
- Flushing of Rain water into river beyond it's capacity from Muarki and Kot Almo embankments got worsen and caused breaches.
- Many sub drains are either entirely sub-merged or breached. Breaches closed wherever, sites are accessible.

- Accumulation of rain water in cities/towns and other areas of district due to non-existence of suitable drainages/ escapages infrastructure.
- Bottlenecks across aqueducts and water courses crossings.

Sea Intrusion

Sea intrusion was the result of lack of freshwater in downstream Kotri, this was one of the reasons. There had been mangroves to prevent sea intrusion but the same had disappeared. The Federal Flood Commission (FFC) had also conducted a study of sea intrusion spread over 150 kilometers of both the districts (Thatta and Badin). Rise in sea level caused flooding in the coastal areas of Thatta while intermittent rains continue in Badin. The Met Office indicated seawater flooding in the coastal areas of Sindh. This sent a wave of panic among the residents of Thatta, Ketty Bunder, Jaati, Shah Bunder, Kharochan, besides villages located at the coastal belt of Thatta district.

Cyclone

The coastal districts have also been adversely affected by heavy rainfall and cyclones. The three coastal districts - Karachi, Thatta and Badin, are highly vulnerable to cyclone emergency. The Thatta district has been badly affected on several occasions. Cyclones not only wiped out the human settlements and resulted in the huge losses of human and animal lives, but they also destroyed and damaged fishing boats, therefore badly affected the livelihood of the majority of residents of district. Historically, the tropical cyclones formed over the Arabian Sea and making landfall at the coastal areas of Sindh including Thatta. Major cyclones during the last 100 years which hit coastal areas were in May 1902, June 1926, June 1964, November 1993, June 1998, May 1999 and June 2007. The Cyclone Yemen in 1999 hit three coastal districts of Sindh, where 244 loss of life, 40177 animals perished, villages affected to 1449, houses damaged to 29873, population affected 0.5 million was reported. Damaged infrastructure was 45 PHED facilities, 16 Health facilities, Educational institutions 334 and 208 kms of roads. Loss in financial terms was about Rs. 3.231 billion (PDMA Sindh Reported).

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

Cyclone Nanauk, which hit the coastal areas of Oman by June 15, 2014. It moved towards Oman coast with sustained speed with average of 130 km/h. It caused intermittent rainfall, together with gusty-winds in coastal areas of Sujawal, Thatta and created panic amongst dwellers.

Tsunami

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

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

Drought

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

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

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

Monsoon

The southwestern summer monsoons occur from June through September; parts of Rajasthan India, Tharparkar Sindh and adjoining areas of the northern and central Indian subcontinent heats up considerably during the hot summers. This causes a low pressure area over the northern and central Indian subcontinent. To fill this void, the moisture -laden winds from the Indian Ocean rush in to the subcontinent. These winds, rich in moisture, are drawn towards the Himalayas, creating winds blowing storm clouds towards the subcontinent. However the Himalayas act like a high wall and do not allow the winds to pass into Central Asia, forcing them to rise. With the gain in altitude of the clouds, the temperature drops and precipitation occurs. Some areas of the subcontinent receive up to 10,000 mm of rain. The southwest monsoon is generally expected to begin around the first week of June and dies down by the end of September. The moisture-laden winds on reaching the southern most points of the Indian peninsula, due to its topology, become divided into two parts as under:

- Arabian Sea Branch of Southwest Monsoon
- Bay of Bengal Branch of Southwest Monsoon

Summer monsoons result in heavy cyclones and weather systems based precipitation originating from Bay of Bengal and also Arabian Sea. The Bay of Bengal related weather systems tend to traverse the Indian landmass and cause heavy precipitation along the southern reaches of Himalayas along Pir Panjal Range in Kashmir which constitutes the catchment region for all rivers except Indus. Offshoots of Hindu-Kush like Koh-e-Suleiman range limits monsoon impact in the west of the country. If the eastern monsoon system originating from Bay of Bengal were to combine with western weather systems it would result in very heavy precipitation which can contribute towards major floods like in 1992.

Impacts of Climate change on Indus Delta

The Indus River Delta forms where the Indus River flows into the Arabian Sea in Pakistan. The delta covers an area of about 41,440 km² (16,000 square miles), and is approximately 210 km across where it meets the sea. The active part of the delta is 6,000 km² in area. The climate is arid, the region only receives between 25 and 50 cm of rainfall in a normal year. The delta is home to the largest arid mangrove forests in the world, as well as many birds, fish and the Indus Dolphin.

Since the 1940s, the delta has received less water as a result of large scale irrigation works capturing large amounts of the Indus water before it reaches the delta. The result has been catastrophic for both the environment and the local population. As a result, the 2010 Pakistan floods were considered "good news" for the ecosystem and population of the river delta as they brought much needed fresh water.

The population of the active part of the delta was estimated at 900,000 in 2003. Most of the population depends on agriculture and fishing. Mangrove forests provide fuel wood. Many former settlements in the delta have been abandoned as result of lack of water in the Indus and the encroaching Arabian Sea.

Sindh government announced that 8,000 hectares of mangrove forests had been planted, and more plantations were considered (however, the delta has lost 170,000 hectares of mangroves over the past 50 years).

The delta faces pollution both from sea and the Indus river. Chemical run-off into the river threatens many species. Most of this chemical run-off consists of agriculture pesticide and fertilizer. The delta faces pollution from the Arabian Sea. Karachi, Pakistan's largest city, releases sewage and discharge from industrial units into the Arabian sea, most of which is untreated. Both Port of Karachi and Port Qasim handle significant shipping traffic, resulting in oil discharge, some of which reaches the delta. All of this pollution lowers the river water quality, causes eutrophication, reducing the amount of habitat.

VULNERABILITY ANALYSIS

Socio-economic Vulnerability

The people living in far areas or villages are more vulnerable and marginalized, with less availability as well as accessibility to alternative means of livelihood. There is no forewarning system for making people informed of any disaster in the entire coastal belt. Sometimes radio news are flashed which are the only source in addition to mobile phones possessed by few people in the village. The absence of early warning education and improper copping mechanism and non availability of formal protection reduce the social resilience and coping capacity of affected communities. These communities are largely depending upon poor and fragile resource base with no control over and entitlement of natural productive resources such as arable land, and small-scale entrepreneurship. These non-structural dimensions of vulnerability make them the most vulnerable.

Structural Vulnerabilities

The dwellings, hamlets and villages those are situated in close proximity of Indus River or Sea; are the most frequent subject to the disasters. The structure and placement of houses, non-availability of disaster -resistant physical infrastructure and remoteness comes into alliance to constitute the physical vulnerability of communities at large. Water resource mismanagement

and poor management of drainage system multiply miseries for these communities. Lands under cultivation have become saline and degraded due to successive floods.

Elements at risk

- Elderly people and the disable
- Children and pregnant women
- Sick and ailing people
- Widows and single women
- Families living near the sea
- Families living in thatched houses
- Fishermen at sea
- Farmers
- Livestock
- Family valuable documents
- Houses & weak structures
- Livelihood assets such as boats, nets
- Standing crops, horticulture trees and plantation
- Village water sources/ Ponds/ Hand pumps etc

In the targeted area 86% houses are Kacha, which are made of local material and reinforced with mud. However, 14% houses are Pacca/ Semi Pacca made of bricks and cements. People usually live in mud-thatched houses in these areas. Lands under cultivation are increasingly becoming saline and degraded due to successive floods and sea intrusion.

There are three types of vulnerabilities found during assessment as under;

Physical/Material Vulnerability

Weakness of the built environment and lack of access to physical and material resources i.e. living in hazard prone areas or in unsafe buildings, lack of savings, insurance and assets constitutes physical/material vulnerability.

Social/Organizational Vulnerability

Social/Organizational Vulnerability refers to inequality in social systems that discriminate against and marginalize certain groups of people from accessing resources and services. People who have been marginalized in social, economic or political terms are vulnerable to disasters.

Weakness in social and organizational areas may also cause disasters e.g. deep division can lead to conflict and war. Conflict over resources due to poverty can also lead to violence.

Attitudinal/Motivational Vulnerability

Existence of fatalistic myths and religious beliefs influence people's vulnerability to disaster risks. If people believe that disasters are 'acts of God' and if they have low confidence in their ability to affect change or have 'lost heart' and feel defeated by events they cannot control, these people are often harder hit by disasters.

Physical Vulnerability	Social Vulnerability	Motivational Vulnerability
District Thatta is vulnerable to number of natural hazards like riverine and rain floods, cyclones and droughts. River Indus divides Thatta into two parts i.e. East and West. Four tehsils of Thatta district are on the right bank, four are on left bank while one tehsil Kharo Chhan is on both sides of river Indus. River Indus, after receiving water from 5 of its tributary rivers, causes floods. Flood 2010, 2011 and 2012 is the recent instance.	Poor people can't afford investment in disaster risk reduction. Thatta District has been declared as one of the poorest district of Pakistan; especially its coastal areas are extremely poverty stricken. "The poverty figures in Thatta district are higher perhaps as high as 70 percent.	Land use planning and wise management of land are rarely followed by the people of the district. People prefer to live near river side for agriculture purpose which is mostly low lying areas. That's the reason that settlements of low lying areas receive heavy damage than rest of other areas.
Geographically, Thatta is divided into three parts. The south western part is saline and sea-affected due to long coastline of about 107 kilometres as well as shortage of river Indus water, while the southern portion adjoining "Great Run of Kachh" on the border of India is desert like sandy area. The northern part of this district is paramount and known as "Kohistan" connected with Kheerthar range of mountains.	District Thatta is rural by its characteristics like majority of the other districts in Sindh. 89 percent of the population resides in rural area as compared to the 11percent that resides in the urban areas. Most people in rural areas lack job opportunities, health and educational facilities which escalates their risk against different hazards.	Lack of knowledge of general public and local officials about severity of hazards that may affect them, associated risks, damage, and precautions to be taken, is perhaps one of the most significant hindrances in present day efforts to mitigate the potentially disastrous effects of most hazards.
The Coastal tehsils of District	In 1998, population of district	Whenever early warning is

Thatta being in close proximity to the Arabian Sea are endangered with growing seawater intrusion owing to the reduced fresh water flows/ availability. Vast land has merged in sea. Keti Bunder and Kharo Chhan Tehsils of the district are the worst affected of the land degradation as a result of sea water intrusion.	Thatta was 1,113,194 with an estimated growth rate of 2.26% per annum while the estimated population for year 2014 is 1,593,887persons. Population gives birth to many socio-economic problems and makes the area vulnerable to different natural and made-made hazards.	issued to the people against any hazard, the people refused to evacuate their area. Same event occurred in Flood 2011.
Floods/Heavy Rains in the Sindh province is because of the climate change. Environmental scientists agree that this has happened because of climate change. "We cannot explain the floods in Sindh as the area that received the rain is normally very dry. The amount of rain it received is usually the amount it gets in five years.	Dependent population [the population that is less than 15 years and more than 65 years of age] in the case of Thatta District is 46.79 percent of the total population and the working population is 53.21 percent, which shows that dependency ratio in the district is 88 percent.	In rural areas of the district women are marginalized in disaster risk reduction process because of social, economic, biological and physical differences. Disaster impacts on women and men differently, even within the same household. Women have less social, economic and political power and are not represented as well in formal leadership structures.
Agriculture is largely underdeveloped in district Thatta. Due to the flood irrigation system, acute water shortage and inadequate system of drainage, the cultivable land has degraded to a varying degree causing a threat to food security and incomes and, employment of the farming community, particularly of small landowners and *haris*	The education status is quite poor in Thatta. The overall illiteracy rate for year 2012-13 (for the population of 10 years and above) 64%; for male it is 52 and for female it is 77%. For the urban rural comparison, rural illiteracy rate is higher than the urban. Literate people can easily be mobilized and aware of the different disaster risks.	Most of the people including male, female and even children are fond of chewing *Paan* and *Gutka* which makes them vulnerable to different diseases like oral cancer.
Disasters are rooted in development failures e.g. unsafe buildings that could not withstand cyclones, tsunami and earthquakes results in disasters. Most	Plenty of information is available with various agencies especially on status of cyclones and floods affected communities and persons. Several NGOs have	Cultural constraints on female mobility which hinder self-rescue, for example, women may not leave the home without male permission.

settlements of the district are made up of sub-standard material even two-third54 of the housing units of the district are constructed with wood and bamboo.	started working on Community-Based Disaster Risk Management in several villages and UCs. However, information on hazard risk, specific to vulnerable areas and at various levels (tehsils, union council & village) is still limited.	
Coastal tehsils of the district Thatta lack forests of mangroves and coconut which resist strong winds and also prevent soil degradation. There is mounting evidence that over exploitation and loss of mangrove cover has made the coastal communities of the district vulnerable to cyclones. Indus delta areas of Badin and Thatta have seen two major cyclones in quick succession in 1999 and 2001.	According to Census 1998, the economically active population was 25 percent. A high unemployment rate of 18% percent was recorded. Two third of the total employed persons was engaged in primary occupation namely agriculture, forestry, fishing and hunting	
Being in the tail and having large (Kohistan) area, the district has gone through painful sufferings of drought due to meager rainfalls (below 100 mm) and shortage of water.	Though awareness sessions and trainings, for educating the local vulnerable communities, are part of the policies of the District Disaster Management Authority (DDMA), the same have not been implemented up till now.	
Mechanism of early warning system is not up to the mark in Pakistan.	Lack of coordination amongst all stakeholders is a major hindrance in implementation and progress of the Disaster Risk Reduction process.	
Piped water is available to only 16% percent of housing units. Drinking water is purchased at a high cost by most coastal communities and lack of access to drinking water is one of the principal	Community-based disaster drills are an important aspect of emergency management yet so very neglected by the district authorities. These drills provide a chance to practice the full spectrum of	

reasons that households out-migrated. About 26 percent of rural households have hand pumps inside the housing units, while 7percent of housing units use wells.	disaster response.	
Livelihood of the coastal communities is vulnerable against hazards like sea intrusion, cyclones, droughts and floods. According to recent surveys by Sindh Board of Revenue, the degraded lands shot up to 2.2 million acres in 159 *dehs* reducing crop production in Thatta. Drought and disasters have a devastating impact on fishing, livestock and other coastal livelihoods.	Risk assessment is the process of hazard identification, analysis and determination of appropriate ways to control these hazards. At the district level, there is a deficiency in risk assessment of disaster prone areas. Vulnerability map (used to identify vulnerable locations) of the district is also not available.	

Sources: DRM Plan Thatta 2013, Baseline survey of coastal areas of Thatta district , vol 1, Pakistan Social And Living Standard Measurement Survey (PSLM) 2012-13

CAPACITY ASSESSMENT

According to ADPC's definition, Capacities are resources, means and strengths, which exist in households and communities and which enable them to cope with, withstand, prepare for, prevent, mitigate or quickly recover from a disaster. The combination of all the strengths attributes and resources available within a community, society or organization that can be used to achieve agreed goals constitute its capacity to cope with hazards.

Physical/Material Capacity

In most disasters, people suffer their greatest losses in the physical and material realm. Access to physical/material things or objects count as physical capacity. A few examples of physical and material resources are cash, food, land, properties and tools.

Social /Organizational Capacity

When everything physical is destroyed, people still has their skills, experiences and knowledge; they have family and social networks. They have leaders and systems for making decisions. They

also have local, collective 'wisdom' reflected in their cultural practices that help them reduce or cope with disaster risks.

Attitudinal/Motivational Capacity

People also have positive attitudes and strong motivations such as the will to survive and willingness to help each other.

Through the HVCA and reviewing of secondary information following capacities recorded to have better preparedness to deal with natural disasters in Thatta.

Physical Capacity	Social Capacity	Motivational Capacity
In the year 2002-2003, Sindh Forest Department [SFD] allocated Rs74.26 Million for replanting and expansion of the forests especially in the coastal areas. Number of schemes were included in the Annual Development Programme ADP 2002-2003 e.g. "Replanting Regeneration of 8,000 ha of Indus Delta Mangroves in Shah Bunder, Keti Bunder & Karachi areas". (2000-2001 to 2004-2005), "Reforestation of harvested areas in irrigated plantations over 2500 ha in Hyderabad & Thatta.	The District Disaster Management Authority Thatta is the focal organization and authority in the conduct and implementation of activities and actions on Disaster Risk Management in Thatta district. In the event of a disaster, the DDMA carry out emergency response and relief activities in the affected areas. DDMA formulates DRM Plan of the district and conduct education, training and public awareness programmes for local officials, stakeholders and communities.	Non- governmental organizations are following the policy of DDMA which is, to educate and aware maximum number of people on disaster risk reduction and management. They organize workshops and seminars to communicate their message to mass population and aware them of their potential hazards.
Health facilities of District Thatta includes five hospitals, eight Rural health centres (RHCs), two Mother Child Care Centre (MCHC), forty seven Basic Health Units (BHUs), and twenty four General Dispensaries (GD) and four Sub-Health Centres (SHC). These health facilities provide health services both in rural and urban areas of	Disaster Risk Management Plan of the district Thatta is produced by Government of Sindh in Nov, 2008 which contains complete information of the District, its Disaster History, Hazards and Emergency Response Structure. This document is very helpful for relief agencies and other stakeholders who want to work on DRM/DRR in district Thatta. http://www.ndma.gov.pk/Docume	In the flood 2010 and 2011, the volunteers assisted the government, NGOs and other welfare activities and presented their services wherever needed.

the district not only in routine but also in extreme circumstances.	nts/DRM_Plan/THATTA%20pLAN.pdf	
	After 2010, 2011 and 2012 flood events, different NGOs /INGOs have focused their attentions on shelter, wash, and livelihood activities. Most of the NGOs have focused their attention to relief activities.	At the grass root level, trainings are conducted by different organizations like NRSP, Islamic Relief etc. in the disaster prone areas to increase the capacity of the people by educating them on different hazards and their measures. Some community organizations are also replicating these trainings. In most of the cases, follow up of these trainings is yet to be carried out.
Thatta is a coastal district some kilometres away from Karachi. A fishery industry is well established which provide fish to different parts of the Province. Fish industry is a source of revenue collection which enhances socio-economic conditions and standard of life of the people by reducing their vulnerability. However, drought and destruction of breeding grounds and estuaries has caused significant reduction in fishing.	For the urban rural comparison, urban literacy rate is higher than the rural. Literate people can easily be mobilized and aware of the different disaster risks.	
In the coastal areas, fishermen community has boats, which can be used in case of flood situation. Boats of the Fishery department and Army can also be utilized in search and rescue operation.	In order to reduce poverty and enhance the capacity of the people, the Government of Sindh with the support from Asian Development Bank has initiated a project named Sindh Coastal Community Development Project (SCCDP) in the disaster prone areas of district Thatta.	

The northern part of this district consists of small hills that are extended till Kheerthar range of mountains. This heighted area of the district is used as evacuation point during flood disaster. Most people take shelter in this elevated area.	Pak Army provides help in the emergency situation and assists the people in evacuation, to move them for safer places. Army also provides boats, helicopters and other equipment in time of need.	
District headquarters of Thatta is connected with other *talukas* through well connected roads. Although these roads are single but can be considered as good quality roads. Most Roads of the district are built on medium height which be used as evacuation point in flood disaster. Good roads are also helpful in carrying out relief activities.		
Source: District Education Profile Thatta, 2012-13, (Reform Support Unit), Baseline survey of coastal areas of Badin and Thatta districts , vol 1, March,2012, http://www.sindhforests.gov.pk/resources.html [Development Program], World Health Organization (WHO), DRM Plan Thatta 2013		

EMERGENCY CONTACT LIST

S#	Service	Contact
1	Natural Gas Complaints	1199
2	Police Emergency	15
3	Railway Inquiry	022-9200673/74
4	Govt Post Office	0298-923012
5	Telephone Complaint	1218
6	Edhi Ambulance	0298-550301
Source: http://www.districtthatta.gos.pk/Emergency%20Numbers.htm		

List of Govt Bearers working in District Thatta

S#	Organization	Designation	Mobile#	Office #	Home #
1	Agha Shah Nawaz Babar	Deputy Commissioner		0298-920061	0298-920056
2	Abdul Saleem Qureshi	Additional Deputy Commissioner-I	0333-7806869	0298-920063	
3	Mr. Imran Ali	Additional Deputy Commissioner-II	0321-2222425	0298-920093	
4	Imran Hassan Khuwaja	Assistant Commissioner Thatta	0321-8901615	0298-920171	
5	Mr. Karim Din Panhyar	Assistant Commissioner Mir Pure Sakro	0300-2459606	0298-760032	
6	Dr. Ghulam Mohammad Korejo	Assistant Commissioner Ghorha Barhi	0300-0351092		
7	Gada husssain Abrho	Mukhtiar Kar (Revenue Thatta	0300-9318695		
8	Dr. Ghulam Mohammad Korejo	Assistant Commissioner Keti Bundhar	0300-0351092		
9	Ab Latif Abbassi	Mukhtiar kar Revenue (Ghorha Barhi)	0300-3376341		
10	Amanullah Nidwani	Mukhtiar kar Revenue (Ketti Bunder)	0300-9851588		
11	Ashraf Kunbhar	Mukhtiar Kar Revenue (Mirpure Sakro)	0300-8388556		
12	Imtiaz Memon	(XEN) Building Thatta	0300-3004797	0298-920170	
13	Ghulam Shabir Memon	XEN (Education Works Thatta)	0300-8378024	0298-920012	
14	Ram Chand	XEN PHED Thatta	0321-9220620	0344-5620620	
15	Naeem Memon	XEN (irrigation) Kalari Bagharh Thatta	0300-3300707		
16	Fareed Memon	XEN (Irrigation) Mir pure Sakro Division	0300-3049279		
17	Shahjan Shah	XEN Agriculture Workshop	0303-3396842	0298-920014	
18	Ghulam Yaseen Qureshi	XEN RBOD Thatta	0334-2388812		
19	Zahid Memon	XEN Provincial Building Thatta	0300-2995264	0298-920197	
20	Shabir Memon	XEN Roads Thatta (add, Charge)	0300-8378024		
21	Maqsood Memon	XEN Provincial Highway Thatta,Badain	0300-2196944		
22	Shoaib Ahmed Sughario	XEN Drainage Thatta	0321-2886807		

23	Syed Mehdi Shah	XEN (operation) HESCO Wapda Thatta	0300-9377976		
24	Ab Ghafoor Shaikh	XEN (construction) HESCO Wapda Thatta	0347-3669629		
25	Ghulam Hussain Wagan	District Accounts Officer	0315-9202920	0298-920068	
26	Riaz Shar	Population Welfare Officer	0300-310972	0298-770220	
27	Kaka Ghulam Qadir	DEO (Education) Thatta	0308-3308778	0298-920141	
28	Ghulam Mustafa	DO (Sec & Higher Sec) Thatta	0300-2959614		
29	Ab Rauf Kandrho	DO Elemantary Thatta	0300-3669791		
30	Imtiaz Bhutto	Deputy Director Agriculture Thatta	0333-7540919	0298-920150	
31	Khuda Bux Behrani	DO Social Welfare Thatta	0321-3715351		
32	Shafqat Abrho	DO (Fisheries)	0300-2229190		
33	Zulfiqar Ali Memon	DO (forest) Thatta	0314-2852319	0298-920108	
34	Dr.Salah Din	DO (Poultry) Thatta	0300-9215477		
35	Dr.Mohan Lal	Do (Livestock Animal Husbandry)	0333-2113952		
36	Shahid gaho	DO Water Management Thatta-1	0342-2022225		
37	Dr.Zahoor Memon	DHO (Health Thatta	0315-3753113	0298-920154	
38	Mehboob Zardari	TMO Thatta	0300-0200552		
39	Mamtaz Ali Zardari	TMO Sakro	0300-2114370		
40	Qazi Ali Gulzar	TMO Ghora Barhi	0333-7103858		
41	Syed Imtiaz	Tourism officer, STDC Thatta	0300-3047515		
42	Abdul Qayoom	AEN NTC Thatta		0298-920000	
43	Shahid	AEN NTC Thatta	0300-3784786	0298-770000	
44	Fida Hussain Mastoi	SSP Thatta		0298-920133-4	
45	Asad Aijaz	DPO (HQ) Thatta		0298-920137	

Source: Office of Deputy Commissioner Thatta

SECTORAL DRR MEASURES

Livelihood

- Fodder stocks should be maintained by the sector (if available) to cope with emergencies.
- Livestock owners should be encouraged to insure their cattle heads.
- Capacity can be built through awareness programs on livelihood diversification.
- Flood control and salinity control projects can be conceived to make more land available for cultivation. (For technical Team)
- Sector lead should have meetings with Irrigation department to carry out hydraulic studies so that flooding can be avoided and find out catchment areas and water courses for surface run off.

Food

- As district government has declared that all distributions should not be planned/ carried without prior approval/information of district Govt.
- In case of any distribution, points should be established in the emergency hit area and should be easily accessible to most of the needy population.
- For extremely vulnerable groups such as elderly persons, people with disabilities, female and children, separate desk and queues at food distribution point should be established so that they do not suffer difficulties in attaining food.

WASH

- Innovative approaches are required to ensure the availability of low-cost, simple, and locally acceptable water and sanitation interventions. Integrating these approaches into existing social institutions such as schools, markets, madrassa and health facilities is required.
- Sector lead should meet with Municipal administrators to monitor the quality of water and should distribute chlorine tablets for water purification in order to avoid diseases like cholera and hepatitis during floods.
- DRR measures should be incorporated in the construction of sewerage system in order to minimize the possibility of over flowing of sewage water in rainy days and to mitigate the hygiene issues.

- Hand pumps should be installed on raised platforms to maintain adequate access to water supplies in the event of a flood.
- Possible measures should be taken through awareness raising campaigns in schools and village to avoid deterioration of aquatic environment.
- WASH lead should work with the government to establish and strictly enforce strict construction codes so that future threats can be mitigated.

Social Mobilization Unit (SMU)

- Active people from the community organizations (COs) should be used for disseminating early warning for the local endangered communities because people have lot of trust in informal and locally influential sources of information; e.g. a religious leaders, a teachers or any influential.
- FSL lead with the support of SMU should design and organize advocacy seminars, trainings and awareness sessions for improved agricultural practices by involving COs chairmen and presidents as they have great influence over the community members.
- FSL lead and SMU should also organize the awareness sessions by incorporating active youth for mobilization of vulnerable communities and should promote some business through awareness building livelihood activities.
- Stockpiling of essential food items should be encouraged among the community through awareness programs (SMU).