



# Neighboring Risk



## District Thatta

Hazard, Vulnerability and  
Development Profile

## **Neighboring Risk: An Alternative Approach to Understanding and Responding to Hazards and Vulnerability in Pakistan**

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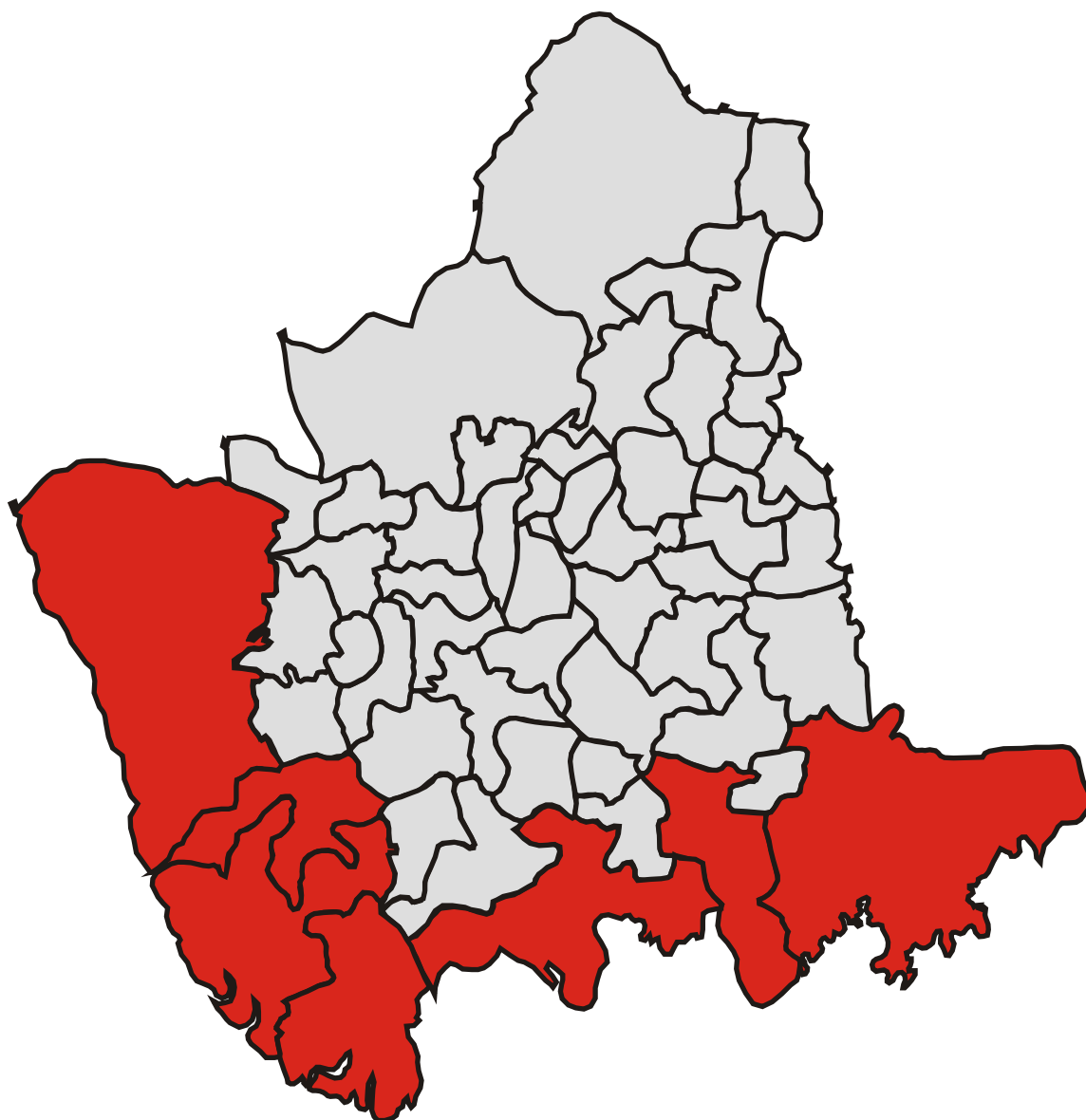
## DISTRICT AT GLANCE

Variable	Value
<b>Area and Administrative Divisions</b>	
Area	17,355 sq.km
Number and name of Tehsils	9 Thatta Jati Shah Bunder Mirpur Sakro Ghora Bari Kharo Chaan Keti Bunder Sujawal Mirpur Bathoro
Number of Union Councils	55
Number of Mauzas	652
<b>Climate and Land use</b>	
Average annual rainfall	Less than 125mm
Percentage of area under forest cover	
<b>Demography</b>	
Estimate Population (2006)	13,88,000
Estimated Population Growth rate (1998 -2006)	2.80%
% increase in population (1981 - 2006)	102.7%
Male-female ratio (Census1998)	112.5
Proportion of urban population	11.21%
Proportion of children population less than 10 years (Census 1998)	—
Proportion of population less than 18 years (Census 1998)	—
<b>Housing</b>	
Housing units having pacca structure (in terms of walls)	21.09%
Proportion of housing units comprising of one room	39.32%
Proportion of housing units without any toilet facility	17.51%
Proportion of housing units without electricity	69%
Percentage of households using biomass fuels for cooking and heating	94.24%
Proportion of households with piped water supply	23.04%
<b>Education and Literacy</b>	
Adult literacy (among population 15 years and older)	Both Sexes: 32% Male: 47% Female:13%

## DISTRICT AT GLANCE

Health	
Percentage of Children (12-23 month) yet to be fully immunized	59%
Percentage of pregnant women receiving tetanus toxoid injection	26%
Percentage of deliveries taking place at home	71%
Percentage of women having access to prenatal and postnatal care from a formal health facility	Prenatal: 39% Postnatal: 17%

# CYCLONE PRONE UNION COUNCILS



Cyclone Prone Union Councils



## CYCLONE &amp; FLOOD PRONE VILLAGES

## Villages Likely to be Affected During Flood Season

1	Syed Sattar Dino Shah, Taluka Thatta
2	Ibrahim Shah, Taluka Thatta
3	Ghulam Hyder Shah, Taluka Thatta
4	Dodo Dodani, Taluka Thatta
5	Amin Ghirano, Taluka Thatta
6	Nawaz Hamlani, Taluka Thatta
7	Amir Shah, Taluka Thatta
8	Tando Hafiz Shah, Taluka Thatta
9	Arbab Haji Muhammad Dal, Taluka Thatta
10	Village Arbab Bhai Khan Babar, Taluka

11	Thatta Village Haji Abdul Rehman Baber, Taluka Thatta
12	Village Ongar, Taluka Thatta
13	Village Haji Sakhani, Taluka Thatta
14	Village Haji Muhammad Rahim Baber, Taluka Thatta
15	Village Arbab Wali Muhammad
16	Village Rajoo Nizamani
17	Village Esa Baber
18	Village soomar Shoro
19	Village Mitho Gulani
20	Village site

## Population Vulnerable to Cyclones ETC

Following Dehs consists of various villages of different Talukas which are located in the coastal areas which are directly hit by the cyclones. During cyclones/floods rain it

Name of Taluka	Name of DEH	Area in Acres	Approximate Persons
----------------	-------------	---------------	---------------------

MIRPUR SAKRO

1.	Khaghan	4975-0	3772
2.	Ladiun	2703-0	469
3.	Chowbandi	1466-0	1841
4.	Dareshi	4842-0	71
5.	Milko	1022-0	471
6.	Dandhi	2925-0	315
7.	Piniladho Shah	2909-0	132
8.	Lakha	6143-0	16
9.	Kalarsarkari	2933-0	550
10.	Pat Marho	4046-0	2652
11.	Ghono	4802-0	690
12.	Khatikun	3627-0	248
13.	Gairabad 1	2816-0	631
14.	Gairabad 2	1903-0	514
15.	Chalko	35616-0	130
16.	Tobario	6690-0	85
17.	Jhim	4166-0	1085
18.	Choubatta	4390-0	400
19.	Chann belo	1647-0	1210
20.	Gath	1796-0	870
21.	Karood	3808-0	225
22.	Kar Malik	2572-0	870
23.	Ket Jagir & Raiti	1170-0	135
24.	Tal	3323-0	500
25.	Gujo Bari	4235-0	1630
26.	Chach Barho	4108-0	550

JATI

## CYCLONE &amp; FLOOD PRONE VILLAGES

Name of Taluka  
MIRPUR SAKRO

## Name of DEH

## Area in Acres

## Approximate Persons

27.	Wakai	3825-0	70
28.	Pooting	1780-0	50
29.	Boohar	4108-0	550
30.	Poonbari	2425-0	440
31.	Sir Gandho	4095-0	1850
32.	Khanto	3229-0	7320
33.	Jhiraro	2924-0	620
34.	Kalro	2964-0	275
35.	Konchono	4487-0	550
36.	Kano	4440-0	1440
37.	Sari Belaro	2506-0	530
38.	Duhar	4110-0	870
39.	Tango	4041-0	890
40.	Khadi	2700-0	525
41.	Chamai	2430-0	435
42.	Dujo	3996-0	1950
43.	Muhara	2025-0	210
44.	Belo	1139-0	480
45.	Oranga	44130-0	220
46.	Gadap	3824-0	40
47.	Hetman	3588-0	1680
48.	Char	4200-0	70
49.	Lass	3367-0	20

## KHAROCHAN

1.	Josherwari	7108-0	430
2.	Ghorar	5540-0	27
3.	Mira	6805-0	236
4.	Hun	6221-0	281
5.	Dinjhar	15958-0	77
6.	Tanko	3546-0	135
7.	Doodet i	5890-0	430
8.	Tikyo	9710-0	132
9.	Warayo	4940-0	90
10.	Keelikot	11690-0	85
11.	Jharoo	4580-0	65
12.	Fakhiaro	6208-0	70
13.	Sukhi	9340-0	64
14.	Nind	6529-0	98
15.	Adyari	6530-0	42
16.	Lakho Chot	16895-0	396
17.	Sultan	4459-0	932
18.	Autherki	2630-0	146

Source: District Government Thatta, Disaster Management Plan 2008

## CYCLONE &amp; FLOOD PRONE VILLAGES

	19.	Sultan Pur	4459-0	932
	20.	Aaracho	3305-0	937
	21.	Takro	7667-0	65
	22.	Padwari	2672-0	473
	23.	Dareshi	2344-0	1086
	24.	Thareiwari	1519-0	674
	25.	Bet Mehar	2502-0	2429
	26.	Mirwari	3478-0	268
	27.	Mutani	920-0	100
	28.	Morechadai	3142-0	1232
GHORABARI	1.	Gamb Wah	9115-0	98
	2.	Waryoon	2568-0	455
	3.	Adano	6110-0	410
	4.	Guba West	4647-0	30
	5.	Khado	2542-0	804
	6.	Khatho	4303-0	980
	7.	Juho	2771-0	1518
	8.	Mehar	2347-0	705
	9.	Hajamaro	3685-0	1548
KETI BUNDER	1.	Keti Bunder	2469-0	694
	2.	Naghewari	5426-0	305
	3.	Kathi Hashim	3231-0	114
	4.	Shah Pur South	3027-0	165
	5.	Chach Wali Mohd	5300-0	232
	6.	Khisar South	4999-0	533
	7.	Jawo	4973-0	300
	8.	Moran Jhar	3865-0	172
	9.	Bambto Baghan	2933-0	1354
	10.	Baghar	1204-0	183
	11.	Wathyoon	1695-0	332
	12.	Takar Kharyoon	5274-0	920
	13.	Kharyhoon	3067-0	300
	14.	Mithriyoon	7805-0	241
	15.	Jo kouchi	6824-0	713
	16.	Keti Pir Ali Bux	2316-0	552
	17.	Khadewari	5367-0	240
	18.	Miyani	7026-0	300
	19.	Takro Kharewari	3554-0	540
	20.	Takro Hashim	3199-0	1148
	21.	Haja Maro	3685-0	1548

## CYCLONE &amp; FLOOD PRONE VILLAGES

## SHAH BUNDER

1.	Babli	4842-0	177
2.	Baghbar	1703-0	299
3.	Takyo Sanhyoon	2502-0	07
4.	Dahatooria	2684-0	1659
5.	Kathore	2579-0	157
6.	Purano Dharo	3156-0	1110
7.	Shah Mehara	3563-0	198
8.	Shah Bunder	2186-0	126
9.	Gujjo	3462-0	116
10.	Khumbati	579-0	103
11.	Ladhalipato	4537-0	238
12.	Umer Jiwan	2408-0	103
13.	Qassin Sommoro	2305-0	90
14.	Larh Sanerho	3226-0	59
15.	Alladino Wada	2414-0	332
16.	Jhaluin	2755-0	80
17.	Bux Ali	2680-0	277
19.	Bagana	3574-0	769

## Development Ranking of Thatta

Ranking Criteria	Rank
Most Deprived District (Overall Provincial Rank Order) out of 16 Districts of Sindh 1: Least Deprived and 16: Most Deprived  Source: Jamal et al, Mapping the Spatial Deprivation of Pakistan, SPDC	15
Ranking of the districts based upon the Z-Sum Technique (out of 97 districts of Pakistan)  Source: Akhtar and Sarwar, Social Development and Quality of Living in Districts of Pakistan, CRPRID, Islamabad, 2007	74
Ranking of the districts based upon the WFS Technique (out of 97 districts of Pakistan)  Source: Akhtar and Sarwar, Social Development and Quality of Living in Districts of Pakistan, CRPRID, Islamabad, 2007	74
Least Developed Districts of Pakistan (A list of districts prepared by Planning Commission of Pakistan and included in the Mid Term Development Framework, 200510)	Included
Ranking on the Human Development Index of Pakistan  Source: Pakistan Human Development Report. UNDP. 2003	64
Districts Falling in the list of most vulnerable districts prepared by NDMA	Included
Districts Falling in the list of Districts vulnerable mainly to flooding (NDMA, 2008)	Included
List of Districts Most affected by Floods in 2007 in Sindh	Included
Most Flood Prone Districts' list by the Metrological Department of Pakistan	Included
Percentage of Children (12-23 month) that have been fully immunized (based upon record and recall), Out of 16 districts of Sindh 1: Highest number of children fully immunized  Source: PSLM, 200607, Federal Bureau of Statistics, May 2008	13
Children under 5 suffering from Diarrhea (in past 30 days prior to the survey), Out of 16 districts of Sindh 1: Highest number of children suffering  Source: PSLM, 200607, Federal Bureau of Statistics, May 2008	10
Pregnant women who have Received Tetanus Toxoid Injection, Out of 16 Districts of Sindh 1: Highest Number of women receiving the TO injection  Source: PSLM, 200607, Federal Bureau of Statistics, May 2008	12



## Development Ranking of Thatta

Literacy among population aged 10 years and above (Out of 16 districts of Sindh) 14

(1: Highest number of Literates, 16: Lowest number of literates )

Source: PSLM, 200607, Federal Bureau of Statistics, May 2008

Adult Literacy among population aged 15 years and older (Out of 16 districts of Sindh) 14

(1: Highest number of Literates, 16: Lowest number of literates )

Source: PSLM, 200607, Federal Bureau of Statistics, May 2008

Percentage of households provided with piped water supply , Out of 16 districts of Sindh 9

1: Highest number of households provided with piped water supply

Source: PSLM, 200607, Federal Bureau of Statistics, May 2008

Percentage of households having an access to flush latrine, Out of 16 districts of Sindh 14

1: Highest number of households having an access to flush latrine

Source: PSLM, 200607, Federal Bureau of Statistics, May 2008

Production of Sugarcane in Sindh ( out of 23 districts of Sindh) 2

Selected Development Statistics of Sindh , Government of Sindh, 2008

Production of Bananas in Sindh (out of 23 districts of Sindh) 2

Source: PSLM, 200607, Federal Bureau of Statistics, May 2008

# Hazards and Vulnerability



Keti Bunder, Thatta, The recently planted mangrove saplings by WWF engaging the local youth. The mangrove forests of Thatta are under serious threat owing to reducing fresh water availability from Indus and deforestation for fuel-wood and timber. The depletion of mangroves has resulted in degradation of delta, fish reproduction, sea intrusion and increasing vulnerability to cyclones. The research studies have shown that mangroves provide an excellent natural shield against the impacts of cyclones.

Hazard	Description
Cyclones	Thatta is prone to cyclones and holds a history of having been hit by severe cyclones. Last time it was hit in 1999. Its 6 out of 9 talukas including Jati, Shah Bander, Kharo Chaan, Ketu Bunder, Ghora Bari and Mirpur Sakro border the Arabian sea and thus are vulnerable to cyclones.
River Flooding	The heavy rains and super flood in River Indus have been affecting Thatta in the past. However the local population now favours flooding as they consider it to be beneficial for their lands, aquifers and to push back the intruding sea.
Sea Intrusion	With the decreased flow of freshwater in River Indus, due to construction of barrages and dams upstream, and non compliance of Inter Provincial Water accord, the sea is encroaching Indus's delta and the courses Indus has left. Tens of thousands of Thatta's lands have been encroached upon by the sea. The sea intrusion is also severely affecting the aquifers and at many a places in the district, the underground water and lands have become saline.
Heavy Rains	Although Thatta normally receives very little rainfall, the sea storms or cyclones are followed by heavy rains. The historical records suggest these trends. These heavy rains are capable of causing rain flooding especially in the coastal zone.
Earthquake	The seismology of Thatta suggests that the district is vulnerable to earthquakes of 5-6 magnitude that are considered to be capable of damaging weaker building structures. The historical records suggest that by the end of 18 <sup>th</sup> century a severe earthquake caused the Indus to change its course and move westward.
Tsunami	The coast belt of Thatta is vulnerable to Tsunamis.
Drought	Being a dry region, Thatta always faces the risk of droughts. The kohistan and desert zone of the district are especially vulnerable to this hazard as they face extreme shortage of potable water.
Epidemics	The outbreak of gastrointestinal is not an uncommon phenomenon in Thatta.

Hazard	Description
Salinity	Although the soils in Thatta are on large part are saline, the sea intrusion has exacerbated the salinity problem in the district.
Waterlogging	The high tidal activity and sea intrusion have increased the water logging issue especially in the delta zone.
Brackish Drinking Water	At many places in Thatta, the underground water is not fit for drinking
Poor Sanitary Conditions	The towns in Thatta suffer from poor sanitary conditions and thus run the risk of disease outbreak.
Road Accidents	Each year road accident, in the district, take tens of lives. In April this month more than 7 people died several sustained injuries in a road accident near Gharo
Industrial Pollution	The waste water from the Industries of Nooriabad Industrial estate is polluting the Keenjhar lake of Thatta. Further the smoke emitted and waste generated by the sugar mills also pose health risks for the residents.
Degradation of Indus Delta	The reduce inflow of fresh water in river Indus and sea intrusion have resulted in the degradation of Indus delta and it is estimated that the delta has shrunk to 10% of size it used to have.
Increasing Use of Chemical Fertilizers	From 1999-2002-03, 85% increase in the consumption of chemical fertilizers was recorded.
Destruction of Mangroves	The destruction of mangroves owing to deforestation and reduce flow of water in Indus has resulted in affecting the reproduction of fish and thus a reduction in the availability of fish especially to the poor fishermen.



# Physical Geography



Kohistan or Hilly zone of District Thatta. An area named Jhampir in this zone has become famous for it being a site surveyed to be fit for producing wind energy. The area is very thinly populated and suffers from a general shortage of sweet water.



## Location, Area and Administrative Division

Lying between 23°43' to 25°26' north latitude and 67°05' to 68°45' east longitude, Thatta is one of the southern and border districts of Pakistan. It is bounded by District Jamshoro in North, Karachi in North West, Hyderabad and Tando Muhammad Khan in North East, Badin in East, Arabian Sea in the South and Rann of Kutch in South East.

District Thatta spreads over a vast area of 17,355 square kilometers and is the second largest district of the Sindh province following District Tharparkar. It covers 12.3% area of the province and 2.18% of Pakistan.

Administratively District Thatta is divided into 9 Talukas or Tehsils, 55 Union Councils and 652 Mauzas/Dehs (Revenue Units).

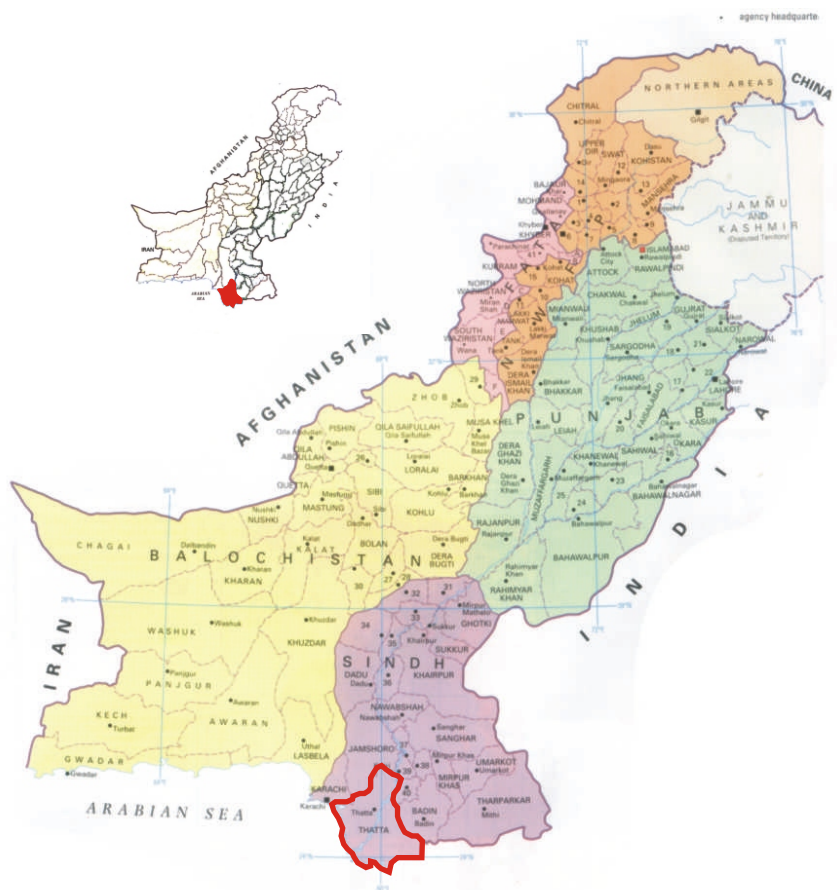
3/4th or 77% area of the district is covered by its four talukas namely Thatta, Jati, Shah Bunder and Mirpur Sakro. Rest of the five talukas cover smaller areas and make 1/4th of the district.

Before the introduction of the incumbent local government system, Thatta was part of Hyderabad division along with the districts of Hyderabad, Badin and Dadu.

Taluka	Area Sq.km	% of area of the district *
1. Thatta	3823	22
2. Jati	3488	20
3. Shah Bunder	3074	18
4. Mirpur Sakro	2958	17
5. Ghora Bari	1018	6
6. Kharo Chaan	778	4.5
7. Ketu Bunder	771	4.5
8. Sujawal	747	4
9. Mirpur Bathoro	698	4
Total	17,355	100%



Kharo Chaan, Thatta



Source: Thatta District Census Report 1998

\*Rounded figures

### Physical Features

Geologically, Thatta is formed of volcanic and sedimentary rocks of quaternary and tertiary types (1) 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 (2).

The natural vegetation found in the district can be divided into two categories-mangroves in the coastal or delta zone, and tropical thorns in rest of the district (3).

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 an other important physical feature and surface water resource of the district.

Climatically, Thatta is hot and arid and receives an average annual rainfall of less than 125 mm. Though the rainfall is low, the rains especially during monsoon can be heavy and violent. The average annual rainy days are 10 (4). In the coastal zone, the summers are warm and winters mild while in rest of the district, the summers are hot and winters are mild.

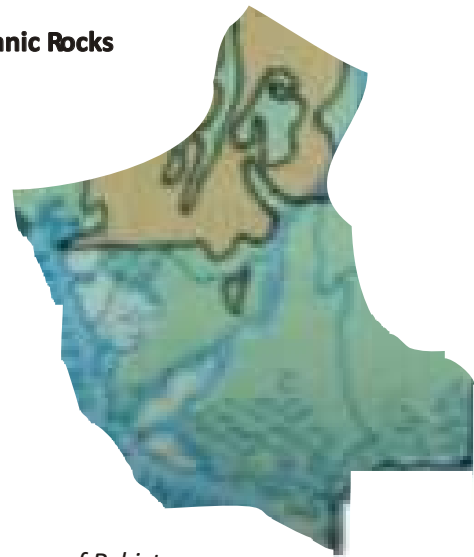
From July to September the district receives the monsoon rains which can range from 125-255 mm. During this period the southern half of the district

### Geology

#### Sedimentary and Volcanic Rocks

#### Quaternary Type

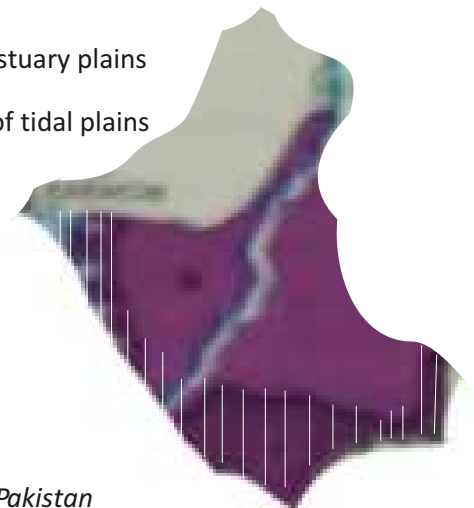
#### Tertiary Type



Source: Atlas of Pakistan, Survey of Pakistan

### Soil Structure

- Mainly loamy saline soils of the estuary plains
- Silty and clayey wet, saline soils of tidal plains
- Mainly rock outcrops and very patchy cover of heterogeneous soil material of the western mountain region.

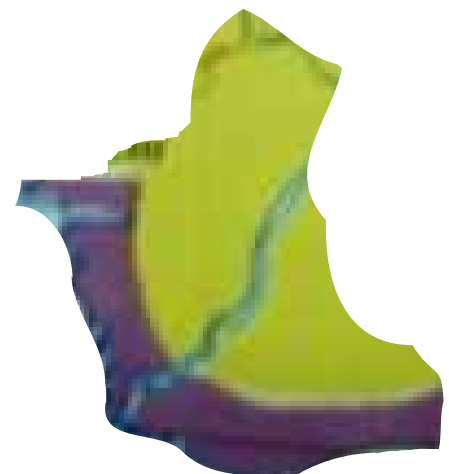


Source: Atlas of Pakistan, Survey of Pakistan

### Natural Vegetation

#### Thorny/Tropical Thorn

#### Mangroves



Source: Atlas of Pakistan, Survey of Pakistan

or its coastal/delta zone receives more rains than the northern half of the district. The district remains dry during rest of the months and receives minimal rainfall.



Natural Vegetation in Kohistan( hilly zone) of Thatta



Tidal Plains of Thatta



### Demography

According to the population estimates by the Government of Sindh, the current population of District Thatta stands at 15,08,000 (..) up from 11,13,194 recorded during the census 1998 thus witnessing an increase of 35% during last ten years. Since the census 1981, when the population of the district was recorded as 7,61,039, it has almost doubled. From 1981 to 1998, it was noted to have been growing with an average annual growth rate of 2.26% making an increase of 46% in 17 years. From 1998 to 2009, the average annual growth rate is estimated to have increased to 2.8% making an increase of 35% in 11 years time period from 98 to 2009.

In the census 1998, the male-female population ratio or balance was found to have aggravated compared to census 1981 figures. In 1981, there were 106 males against every 100 females. The former figure was noted to have changed to 112 in census 1998. The current male-female population ratio is estimated to be 112.5 (..).

Commanding a vast area, Thatta is not a densely populated district. According to Census Atlas of Sindh, 1998, Although there is a 4 times increase in the population density from 16 persons/square kilometers in 1951 to 87 persons in 2009, Thatta is the second least dense district of Sindh after Tharparkar. The population in the district is not evenly distributed. The delta zone and Kohistan area of the district are very thinly populated.

The historical population accounts suggest that population in areas like Ketī Bunder, Khārō Chān, Jherruck and Jhampir which once used to be important and thriving trade and administrative centers, shrank over the



A father (right) and his son (left) at Marak Jakhro, Thatta

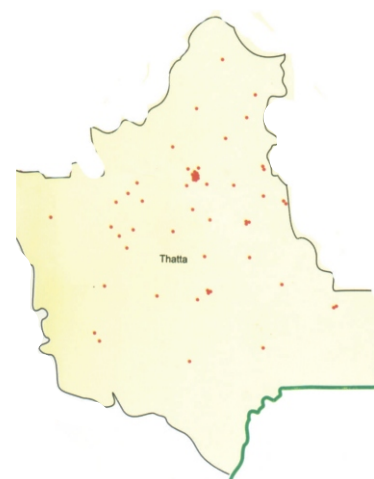
Current Population (Projected for 2009 and 2010)	15,08,000 (2009) and 15,51,000 (2010)
Total Population (Census 1998)	11,13,194 Thatta Taluka: 2,53,748 Mirpur Sakro: 1,98,852 Mirpur Bathoro: 1,51,915 Sujawal: 1,27,299 Jati: 1,23,957 Ghorabari: 1,05,482 Shah Bunder: 1,00,575 Ketī Bunder: 25,700 Khārō Chan: 25,666
Total Population (Census 1981)	7,61,039
Average Annual Growth Rate (1981-98)	2.26
%age of Rural-Urban population (Census 1998)	11.21% Urban and 88.79% Rural
%age of Urban population: Historical Trends	3.4% (Census 1951) 5.8% (Census 1961) 12.9% (Census 1972) 9.6% (Census 1981)
Population Density (Census 1998)	64 persons/sq.km (second least dense district after Tharparkar 47 persons/sq.km) Mirpur Bathoro: 217.6 persons/sq.km Sujawal: 170.4 persons/sq.km Ghorabari: 103.6 persons/sq.km Mirpur Sakro: 67.2 persons/sq.km Thatta Taluka: 66.4 persons/sq.km Jati: 35.5 persons/sq.km Ketī Bunder: 33.3 persons/sq.km Khārō Chan: 33.0 persons/sq.km Shah Bunder: 32.7 persons/sq.km

time. For instance, having a population of 40,000 in 1928 the current population of Keti Bunder town is estimated to be no more than 3000 (..). The population's out migration trends are also alarming. According to Arif Hassan, compiler of 'Sindh: State of Environment and Development', more than 300,000 members of Dabla clan alone from Thatta have migrated to Karachi.

Thatta is urbanizing at a very modest pace. The share of urban population increased from 3.4% recorded in 1951 to 11.2% in 1998. There are also areas which actually de-urbanised. The important examples include Jherruck (that once enjoyed the status of district's headquarters, is merely a very small town now), Jhampir and Keti Bunder etc. The 9 towns or urban centers of Thatta have small population size when compared to the urban areas in other parts of Pakistan. The obvious reasons for Thatta's slow paced urbanization and de-urbanization lie in its proximity to two major urban centers of Pakistan-Karachi and Hyderabad which attract the population pushed out by the urban and rural areas of Thatta. Further the shrinkage of trade and commerce from its urban centers also contributed considerably to this trend.

<b>Population Density Historical Trend</b>	16 persons/sq.km (Census 1951) 21 persons/sq.km (Census 1961) 39 persons/sq.km (Census 1972) 44 persons/sq.km (Census 1981)
Sex Ratio (Census 1998)	112.5
Average Household Size (Census 1998)	5.1 (lowest in Sindh)
Average Occupancy Rate (Census 1998)	3.9 persons/room

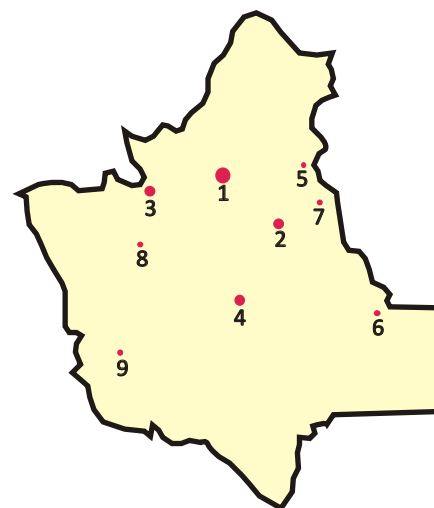
#### **Population Spread in Thatta District (Census 1998)**



— Source: Census Atlas of Sindh, 2006

#### **Major Towns and their population (1998)**

- 1 Thatta (37,515)
- 2 Sujawal (23,286)
- 3 Gharo (16,541)
- 4 Chuhar Jamali (13,401)
- 5 Daro (9,141)
- 6 Jati (7,782)
- 7 Mirpur Bathoro (7,425)
- 8 Mirpur Sakro (7,135)
- 9 Keti Bunder (2,513)



Source: Census Atlas of Sindh, 2006



### Housing

Since 1998, the time of last housing census, the housing conditions does not appear to have improved substantially in Thatta. In 1998, 76% rural housing units had wood/bamboo used as the roofing material. The figure was noted to be 84% in 2006-07. In case of houses in urban areas, 50% were constructed using wood/bamboo as a roofing material, by 1998. The proportion reduced to 25% by 2006-07.

In 1998, 14% rural houses had pacca walls. The figure was noted to have slightly reduced to 13% in 2006-07. The proportions for urban houses were noted to be 53% and 74% on two survey dates respectively.

In 1998, electricity was available to 21% rural and 69% urban houses. The figures were noted to be 21% and 91% respectively in 2006-07, meaning 1 in every 5 rural households do not have access to electricity while 1 in every 10 urban households are living without this facility in Thatta.

Congested housing conditions is an issue for a considerable proportion of rural households. Almost 42% houses in rural areas consist of one room only.

Firewood and other biomass fuels are a fuel option for almost all households in rural Thatta whereas every 3 out of 4 urban households are using these fuels. Gas (piped or LPG), considered to be a cleaner and efficient fuel, is being used by 28% urban and 3% rural households.

The overall sanitary conditions at community, village or town level are poor. Latrines, an important indicator of household sanitary condition, are not available in 2% urban and 20% of rural houses. In 1998, these figures for urban



A hut/house in Kharo Chaan. The frame is made of timber/bamboo while walls of *chhattai*.

Total Housing Units (Census 1998)		2,20,068				
Pacca Housing Units and their percentage (Census 1998)		36,841 (16.74%)				
Katcha Housing Units and their percentage (Census 1998)		1, 83,227 (83.26%)				
Category		Own	Rent	Free	Subsidized Rent	Total
% Distribution of H/H by Housing Tenure	Urban	91.88	3.45	3.56	1.11	100
	Rural	95.89	0.12	3.52	0.47	100
	Overall	95.36	0.56	3.52	0.55	100
		RCC/RBC	Wood/Bamboo	Sheet/Iron/Cement	Other	Total
% Distribution of H/H by Material Used for Roof	Urban	29.36	24.59	44.86	1.19	100
	Rural	5.25	83.60	10.19	0.96	100
	Overall	8.46	75.75	14.80	0.99	100

and rural houses were noted to be 12% and 52% respectively. Thatta is found to have 15th rank out of 16th districts in terms of availability of flush latrines.

Tap water is available to 77% urban and 15% rural households whereas hand pumps is an option of getting water for 10% urban and 52% rural households. Thatta has 9th rank out of 16 districts of Sindh in terms of availability of tap water (...). A large proportion of both urban and rural households have no choice but to purchase water from private water suppliers.



Thatta, a man carrying drinking water is passing by a street board of Coastal Development Authority Sindh.

		Burnt Bricks/ Blocks	Mud Bricks/ Mud	Wood/ Bamboo	Other	Total	
% Distribution of H/H by Material Used for Walls	Urban	73.83	21.65	4.53	0.00	100	
	Rural	13.00	58.27	28.73	0.00	100	
	Overall	21.09	53.40	25.51	0.00	100	
Category		Tap Water	Hand Pump	Motor Pump	Dug Well	Others	Total
% Distribution of H/H by Source of Drinking Water	Urban	77.17	10.32	2.20	0.47	9.84	100
	Rural	14.74	52.07	0.78	0.12	32.29	100
	Overall	23.04	46.52	0.97	0.17	29.31	100
		One Room	2-4 Rooms	5 & More Rooms	Total		
% Distribution of H/H by No. of Rooms	Urban	23.25	74.89	1.87	100.00		
	Rural	41.79	57.48	0.73	100.00		
	Overall	39.32	59.79	0.89	100.00		
		Flush	Non Flush	No Toilet			
% Distribution of H/H by Type of Toilet.	Urban	71.97	26.00	2.03			
	Rural	5.47	74.65	19.88			
	Total	14.31	68.18	17.51			
Category		Electricity	Gas/ Oil	Candle	Other	Total	
% Distribution of H/H by Fuel Used for Lighting	Urban	90.86	1.75	0.00	7.40	100	
	Rural	21.19	53.54	0.85	24.41	100	
	Overall	30.46	46.65	0.74	22.15	100	
		Electricity	Gas/ Oil	Wood/ Charcoal	Other	Total	
% Distribution of H/H by Fuel Used for Cooking	Urban	0.00	28.41	71.59	0.00	100	
	Rural	0.00	1.43	97.71	0.86	100	
	Overall	0.00	5.01	94.24	0.75	100	

**Education:**

In terms of literacy, Thatta has third least literate population in Sindh following Jacobabad and Tharparkar. According to PSLM 2006-07, 34% population (10+) of the district is literate. It is to be noted that 35% population has ever attended school, meaning the proportion of people having ever attended any school is equal to the proportion of population declared literate. The level of literacy is apparent from the fact that 25% population has actually completed primary or higher level of education. This figure for women stands at 10% and 36% for male population.

The proportion of literate population has improved since 1998 when the figure was noted to be 22%. However there continues to exist stark intra district, male-female and urban-rural disparities. 12% rural compared to 41% urban females are literate. There are 7 times more primary, 1 time middle and 2 times high schools for boys than those for girls. 28% population in Taluka Thatta compared to 11% in Taluka Kharo Chaan was literate in 1998. The lesser number of education facilities especially for girls simply means, lesser opportunities for girl children to pursue their education.

There is an acute dearth of higher level education facilities both for girls and boys. In the whole district there exist 1 intermediate and 1 degree college for girls and 2 degree colleges for boys. There is no post graduate college in the whole districts.

Category (%)	Urban			Rural			Total		
	Mal	Fem	Tot	Mal	Fem	Total	Mal	Fem	Tot
AL	72	35	55	43	9	28	47	13	32
LP	74	41	59	44	12	30	48	16	34
PES	75	42	60	45	12	31	49	17	35
PCPHE	61	29	47	32	7	21	36	10	25
PEGS	89	89	89	97	100	98	95	96	96

**AL:** Adult Literacy (among population 15 years and older)

**LP:** Literacy among population 10 years and above

**PEGS:** Primary Level Enrolment in Government Schools as percentage of total Primary Level Enrolment

**PCPHE:** Percentage of Population having completed Primary Level or Higher

**PES:** Percentage of Population having ever Attended School

Source: PSLM 2006-07

**State of Primary Schools**

	2001-02		2002-03		2003-04		2006-07	
	Male	Female	Male	Female	Male	Female	Male	Female
Number of Primary Schools	2273	299	2302	299	2302	298	2688	407
Enrolment	77219	34187	81645	43162	80368	48423	95808	66276
Teaching Staff	4041	721	3788	651	3628	602	4319	820

Source: Development Statistics of Sindh, 2006,  
\*Selected Development Statistics of Sindh

**State of Middle Schools**

	2001-02		2002-03		2003-04	
	Male	Female	Male	Female	Male	Female
Number of Middle Schools	52	32	50	32	51	31
Enrolment	1035	600	846	1138	1324	1479
Teaching Staff	168	96	115	80	121	60

Source: Development Statistics of Sindh, 2006

**State of Secondary Schools**

	2001-02		2002-03		2003-04	
	Male	Female	Male	Female	Male	Female
Number of Secondary Schools	42	12	50	14	55	17
Enrolment	7652	1538	7544	2075	9955	3308
Teaching Staff	591	263	587	174	649	228

Source: Development Statistics of Sindh, 2006

**State of Intermediate Colleges**

	2001-02		2002-03		2003-04	
	Male	Female	Male	Female	Male	Female
Number of Intermediate Colleges		1		1		1
Enrolment		101		151		111
Teaching Staff		3		3		3

Source: Development Statistics of Sindh, 2006

**State of Degree Colleges**

	2001-02		2002-03		2003-04	
	Male	Female	Male	Female	Male	Female
Number of Degree Colleges	2	1	2	1	2	1
Enrolment	1166	369	1392	404	1377	411
Teaching Staff	49	7	51	10	32	9

Source: Development Statistics of Sindh, 2006

**State of Technical/Polytechnic and Mono-technic Institutions**

	2001-02		2002-03		2003-04	
	Male	Female	Male	Female	Male	Female
Number of Institutions	2	..	2	..	2	..
Enrolment	205	..	200	..	209	..
Teaching Staff	9		9		11	

Source: Development Statistics of Sindh, 2006

**State of Commercial Training Institutions**

	2001-02		2002-03		2003-04	
	Male	Female	Male	Female	Male	Female
Number of Institutions	1		1		1	
Enrolment	33		42		44	2
Teaching Staff	4		4		5	

Source: Development Statistics of Sindh, 2006

**State of Vocational Institutions**

	2001-02		2002-03		2003-04	
	Male	Female	Male	Female	Male	Female
Number of Institutions	..	2	..	2	..	2
Enrolment	..	70	..	70	..	50
Teaching Staff	..	3	..	3	..	3

Source: Development Statistics of Sindh, 2006

**Literacy Figures (Census 1998)**

Literacy Ratio (10+)	22.1%
Male	31.585
Female	11.40%

## Health

## Percentage Distribution of Health Consultations in Thatta in Past Two Weeks (Prior to the survey) by Type of Health Provider Consulted

Category	Private Disp/Hosp	Public Disp/Hosp	RHC/BHU	Hakeem/ Herbalist	Homeo Path	Chemist/ Pharmacy	Siana/ Siani	Other
Urban	53.15	42.09	0.00	2.02	1.19	0.78	0.78	0.00
Rural	60.25	25.56	0.29	5.57	0.21	1.35	6.76	0.00
Overall	58.92	28.68	0.24	4.90	0.39	1.24	5.63	0.00

Source: PSLM 2006-07

## Percentage of Children Aged 12-23 Months That Have Been Fully Immunized (Based upon record and recall)

Category	Urban			Rural			Total		
	Male	Female	Total	Male	Female	Total	Male	Female	Total
Based on Record & Recall-Fully Immunized	78	56	68	34	36	35	42	40	41

Source: PSLM 2006-07

## Percentage of Children Under 5 Suffering from Diarrhea in Past 30 Days (Prior to the survey)

Category	Urban			Rural			Total		
	Male	Female	Total	Male	Female	Total	Male	Female	Total
Children Suffering from Diarrhea in Past-30 days	9	20	15	10	7	9	10	9	10

Source: PSLM 2006-07



### Health

The public health facilities in Thatta are consulted, accessible to or accessed by much lesser number of patients compared to those preferring or do not have options but to consult private health facilities. Of those fallen sick, 53% patients in urban and 60% in rural areas were found to have consulted private health facilities compared to 42% in urban and 26% in rural areas who opted for the public hospitals or dispensaries.

58% male and 60% female children aged 12-23 months are yet to be fully immunized in Thatta. A total of 59% male and female children are yet to be fully immunized. In 2004-05, this proportion was noted to be 36%, thus showing a deterioration in the health coverage for children. Thatta has 13th rank out of 16 districts of Sindh, in this regard.

The state of formal primary health care facilities for women is also not encouraging. 33% rural and 70% urban pregnant women consult a formal health facility for pre natal care. 60% urban and 20% rural women receive Tetanus Toxoid injections, while 32% urban and 14% rural women receive formal post natal care. 50% deliveries in urban and 75% in rural areas take place at home.

### Type of Practitioner Consulted for Diarrhea Treatment

Category	Percentage of Diarrhea Cases		
	Urban	Rural	Total
Private Dispensary/Hospital	62	58	59
Govt. Hospital/Dispensary	38	9	14
RHC/BHU	0	2	1
LHW	0	0	0
LHV/Nurse	0	0	0
Chemist/Pharmacy	0	10	8
Hakeem/Homeo Path/Herbalist	0	3	2
Other	0	19	15

Source: PSLM 2006-07

### Pre-Natal Consultation

Category	Percentage of Cases		
	Urban	Rural	Total
Health Facility Consulted	70	33	39
Person/Facility Consulted			
Home TBA	18	10	12
Home LHW	0	0	0
Home LHV	0	1	1
Home Doctors	2	0	1
Govt. Hospitals/RHC/BHU	33	25	27
Private Hospital/Clinic	47	50	49
Others	0	13	10

Source: PSLM 2006-07

## Percentage of Women That have Received Tetanus Toxoid Injection

Category	Percentage of Pregnant Women		
	Urban	Rural	Total
Pregnant Women Injected Tetanus Toxoid	60	20	26
Child Delivery Location & Type of Assistance			
Home	50	75	71
Govt. Hospital/RHC/BHU	20	11	12
Private Hospital/Clinic	30	14	16
Other	0	1	1
Total	100	100	100

Source: PSLM 2006-07

## Health Staff in Thatta

Health Staff	Number
Doctors	439*
Nurses	53*
LHV Technicians	12
Radiographers	..
Health Technicians	..
Dispensers/Dressers	92
X-Ray Technicians	14
Lab Technicians	6
OT. Technicians	7
X-Ray Assistants	1
Lab Assistants	14
OT. Assistants	2
Midwives	60
Dai	..

\*Selected District Development Statistics of Sindh, 2008  
Development Statistics of Sindh, 2006

## Health Facilities in Thatta

Facility	Number
Hospitals	11
Dispensaries	153
Rural Health Centres	9
T.B Clinics	13
Basic Health Units	48
Maternal and Child Health Centres	9

Source: Selected Development Statistics of Sind, 2008

## Post Natal Consultation

Category	Percentage of Cases		
	Urban	Rural	Total
Health Facility Consulted	32	14	17
Person/Facility Consulted			
Home TBA	15	1	5
Home LHW	0	6	4
Home LHV	0	0	0
Home Doctors	0	4	3
Govt. Hospitals/RHC/BHU	34	32	32
Private Hospital/Clinic	51	58	56
Others	0	0	0
Total	100	100	100

Source: PSLM 2006-07

## Livelihoods

Once one of the most prosperous areas of subcontinent, District Thatta is now found in every list containing names of the underdeveloped areas of Pakistan. It was the river Indus and its delta that were sources of prosperity for the local residents. 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. The reduction in the Indus's water and silt it carried resulted in the sea intrusion that swept away many settlements that were once prosperous and thriving centers of coastal trade and agriculture and reduced them to mere poor settlements. People started migrating to cities or switching to professions like fishing which were alien for many of them.

District Thatta has embraced a rural outlook as majority of the district's population resides in rural settlements and depends upon agriculture and allied fields. The census 1998 highlights some of the major livelihood trends prevailing in the district. Some of the major trends include:

- 25% population of the district was economically active,
- 37% population aged 10+ was economically active,
- 32.33% population of the district was comprised of children aged below 10,
- 32.17% of the economically inactive population was comprised of unpaid domestic workers,
- A high unemployment rate of 18% was recorded (18% among males and 7.4% in females)
- 64.24% employed population of the district was noted to be engaged in agriculture and fisheries,
- 63 % of the employed population was noted to be self employed,
- 5.78% employed population was recorded to be absorbed by the government sector jobs (17.22% females and 5.57% males)

A recent survey PSLM 2006-07 notes that 11% households in the district consider that their household economic conditions improved compared to the previous year. Against this, 37% urban and 29% rural households find their



household economic conditioned worsened compared to the previous year. 52% urban and 57% rural households found no change in their economic conditions. The survey results further reveal that 4% urban and 5% rural households opined that the economic situation of their respective communities improved while 29% urban and 23% rural households considered that the economic situation of their communities had worsened.

### Agriculture

The agriculture sector in the district is challenged with many issues. Some of the major ones include:

- Half of district's lands are not available for cultivation and this proportion is increasing steadily over the years.

- The situation of availability of canal irrigation water has been aggravating. From 2000-01 to 2003-04, there was a 6% decrease in the irrigated area. Compared to this there was a 19 time increase in the un irrigated area. During the same period there was a 9% decrease in the canal irrigated area and a 90% increase in the tube well irrigated area.

- The declining availability of water in Indus has serious repercussions for the Indus Delta and agriculture in the district. A large section of population that was previous engaged in agriculture has turned to fishing. From 2000-01 to 2003-04, 14% increase in the number of fishermen was recorded whereas during the same period an 11% increase in the fish production was witnessed.

- The degradation of Indus delta and grazing lands has also resulted in the decline of livestock population. During livestock Census 1996 and 2000, 9% decline in cattle, 32% in buffalo, 51% in sheep, 29% in goat, 73% in camel and 67% in assess population.

- The declining availability of canal irrigation water is resulting in an increasing dependance on the groundwater resources. Just in one year from 2003-04 to 2004-05 there was 330% increase in the installation of private tube wells compared to the previous year.

### Land Utilization (Area in '000' hectares)

Land Utilization			2002-03	2003-04	2004-05
Geographical Area			1735	1735	1735
Reported Area (3+9)			1735	1735	1735
Cultivated Area	1	Current Fallows	313	277	279
	2	Net Area Sown	104	132	131
	3	Total (1+2)	417	409	410
Cropped Area	4	Area Sown More Than Once	27	34	34
	5	Total (2+4)	131	166	165
Uncultivated Area	6	Forest	304	304	304
	7	Culturable Waste	166	172	168
	8	Not Available for Cultivation	848	850	853
	9	Total (6+7+8)	1318	1326	1325

Source: Development Statistics of Sindh, 2006

### Fish Production

Year	Fish Production (Metric Tons)	Number of Fishermen			Number of Boats		
		Full Time	Part Time	Total	Sail	Row	Total
2001	18,944	8635	530	9165	453	21	474
2002	19,891	8868	544	9412	461	27	488
2003	22079	9843	604	10,447	711	485	1196
2004	20982	9848	610	10458	711	485	1196

Source: Development Statistics of Sindh, 2006

Thatta is also witnessing an increasing use of chemical fertilizers. From 1999 to 2002-03, 85% increase in the use of chemical fertilizers was recorded.

### Environment

No district in Sindh and even in Pakistan matches Thatta when it comes to the diversity of environmental features and resources. Thatta is termed mini Sindh as it carries all the environmental features of the province. It has desert, hills/gravel rocks, rangelands, water bodies, delta, tidal flats, creeks, lakes, mangrove and riverain forests, irrigated agricultural lands. Thatta is also rich in bio diversity and an abode of some of the most important environmental resources of Pakistan. Out of the six RAMSAR wetland sites in Sindh, 3 lies in Thatta, out of 34 protected areas of the province, 16 are in Thatta, and of 13 game reserves of Sindh, 3 are in this district. 17% area of the district is under forest cover. Indus Delta lying in Thatta is the fifth largest delta in the world and largest coastal mangrove forest in the world.

Thatta's rich environmental resource base, agriculture, and human population are challenged by a number of issues. The north western hilly zone of the district is severely degraded. The fresh water lakes like Keenjhar is suffering with problems of pollution and the Indus Delta has shrunk to the 10% of its actual size.

### Crop Production

Crop	Area (hectares)			Production (metric tons)		
	2002-03	2003-04	2004-05	2002-03	2003-04	2004-05
Rice	56422	54778	54169	89142	77189	97148
Wheat	8196	9974	9562	11828	15281	18714
Jawar	427	656	378	169	285	156
Bajra	127	132	101	50	51	38
Maize	437	371	210	216	143	75
Gram	23	19	4	13	16	2
Barley	5489	1991	1370	2441	1023	636
Rapeseed	463	117	767	224	46	281
Sesame	62	76	42	14	27	16
Sugarcane	28226	30695	22648	13,67,086	14,92,736	906,641
Cotton	528	515	522	1636	1676	2144

Source: Development Statistics of Sindh, 2006

### Livestock

Census Year	Cattle	Buffaloes	Sheep	Goats	Camels	Horses	Asses	Mules	Poultry
1996	339	314	170	241	11	1	24	0.2	510
2000	309	212	84	171	3	1	8	N/A	N/A

Source: Development Statistics of Sindh, 2006

### Irrigation

Year	Irrigated	Un-irrigated	Total
2000-01	107,492	1,607	109,099
2001-02	105,907	5,305	111,212
2002-03	96,550	7396	103,946
2003-04	100,758	32,176	132,934

Source: Development Statistics of Sindh, 2006

**Tube wells**

Year	Public			Private			Total		
	Electric	Diesel	Total	Electric	Diesel	Total	Electric	Diesel	Total
2002-03	Nil	Nil	Nil	34	18	52	34	18	52
2003-04	Nil	Nil	Nil	2	8	10	2	8	10
2004-05	Nil	Nil	Nil	0	224	224	0	224	224

**Sources of Irrigation***Source: Development Statistics of Sindh, 2006*

Year	Total Area Sown	Un-irrigated	Irrigated			
			Canal	Well	Tube Well	Total
2000-01	109,099	1607	107492	0	0	107,492
2001-02	111,212	5305	104,162		1745	105907
2002-03	103,946	7396	94461	0	2089	96550
2003-04	132,934	32,176	97,437	0	3321	100,758

*Source: Development Statistics of Sindh, 2006***Use of Chemical Fertilizers**

Year	Type			
	Nitrogenous	Phosphoric	Potash	Total
1999-00	13,378	2,352	150	15,880
2000-01	14,774	2,769	725	18,268
2001-02	Data not available			
2002-03	23,704	5,065	706	29,475

*Source: Development Statistics of Sindh, 2006**Source: Development Statistics of Sindh, 2006***Number of Bulldozers**

Year	Number
1999-2000	16
2000-01	11
2001-02	11
2002-03	9
2003-04	9



## HAZARDS

## Cyclones

An effective and locally compatible early warning system should be installed and maintained

The district government of Thatta has initiated a GIS mapping exercise. Under this exercise the vulnerable coastal communities/locations should be mapped. In case of highly vulnerable communities the options of relocating them to safer locations should be considered provided such initiatives are based upon proper research and an effective livelihood program for such communities.

Rigorous efforts are needed for wide scale afforestation at the coast to lower the impacts of cyclones.

Effective contingency, evacuation and relief plans should be made available to manage any cyclone event.

The vulnerable communities should be provided with cyclone-resistant housing designs, construction materials and technologies.

Provincial and District Governments

National, Provincial and District Disaster Management Authorities

Provincial and District Forest Departments

Local, National and International non government organizations including Fisher Folk Forum, WWF, IUCN, BACIP/AKF, UNDP/UNEP etc.

## River, Rain and Sea flooding

Undertake a detailed mapping of villages and spots that are vulnerable to flooding, employing satellite imaging/GIS technology. Such an initiative should be coordinated with other agencies having technical skills and resources for mapping. These institutions may include public sector universities, National Disaster Management Authority, Ministry of Environment, Space and Upper Atmosphere Research Council (SUPARCO) etc.

Improve conventional flood fighting plans by aiding them with features like steps for community preparedness, land use/topographic maps, updated socioeconomic conditions of vulnerable villages and settlements and a financial plan.

Impart training to the concerned departments like police, revenue, agriculture, irrigation, education, health etc on how to deal with emergencies or disaster situations

Taluka Municipal Administration (TO Planning)

N D M A

SUPARCO

Ministry of Environment

District Revenue Department

Oxfam

District Agriculture Department

Plan International

## TOWARDS A SAFER FUTURE

Promote community based flood management/ DRR models being carried out by some non government organizations like Laar Humanitarian and Development Programme (LHDP) in Badin and Fisher Folk Forum

Take measures to address both structural and non structural issues of flood management. The structural ones may include addressing physical vulnerability like poor housing, mobility, embankments/spurs etc and non structural ones- early warning system, community mobilization and organization, evacuation mechanisms, improved Natural Resource Management and livelihood centred approaches etc.

Women, grown up children and youth should be made the driving force and centre of community

Mobilization and organization efforts for community based flood management/DRR.

Promote CCDRR approaches by making the relevant stakeholders capacitated to understand and implement the concepts and practices of Community based DRR, Child Centred DRR and gender sensitive DRR.

Improve efficiency and response capacity of concerned institutions especially Civil Defence, police etc by providing them necessary gadgets, trainings and resources.

Establish a **District Volunteer Pool (DVP)** or a **District Voluntary Movement (DVM)** by engaging youth of the district especially from the vulnerable and underdeveloped areas, and provide them necessary tools and trainings. This pool should be patronized or headed by a figure no less than the District Nazim, District Coordination Officer or District Police Officer (DPO).

Make scouting compulsory in both government and private schools.

Undertake a comprehensive technical, social and environmental audit of existing and proposed (if any) hydrological or flood protection infrastructure (protection bunds, canals, spurs etc) to understand their contribution in increasing or decreasing the flood damages. The corrective measures should be informed by the findings of such auditing.

District Works and Services Department

Provincial Irrigation Department

Civil Defence

Police

District Nazim

District Coordination Officer

District Education and Health Departments

Union Councils and Union Administration

District Council

CCBs

District Government

Taluka Municipal Administrations

Union Administrations.

NGOs for promoting and financing low cost housing improvement programs.

Saibaan

## TOWARDS A SAFER FUTURE

Strengthen **District Disaster Management Authority** and its allied committees at Taluka and Union Levels as required by the National Disaster Management Ordinance and National Disaster Management Framework. These institutions should be supported by the technical input/human resource from local governments, academia, private sector and civil society organizations. These institutions should scrutinize every major development projects being implemented or to be launched in the district for the risk and potential it has related to disasters and DRR respectively. The recommendations of this committee should be seriously considered by the local, provincial and federal governments while approving the development schemes/projects for the district. <sup>T</sup>

Establish a **District Disaster Relief Fund**. Such a fund should be managed by genuinely respectable and trusted local citizens. Common citizens should be encouraged to donate regularly even small amounts like 5-10 rupees in the fund. There can be various innovations to raise money for such a fund including proceeds from Zakat, donations, sale of sacrificial animals' skins etc. This fund should not only be used for supporting the relief activities but also to support vulnerable communities through their representative CBOs/CCBs to undertake community based DRR initiatives.

A certain percentage of the local government funds reserved for CCBs should be allocated for CCBs proposing community based DRR projects in the vulnerable settlements.

The adobe housing structures are especially vulnerable to heavy rains. There should be mechanisms to introduce low cost housing improvement technologies and help households access them through trainings and affordable credit schemes.

The efficiency of Taluka municipal administrations should be improved to lay and manage appropriate storm water drainage system especially in the urban settlements

## TOWARDS A SAFER FUTURE

## Earthquake

Introduce and promote earthquake resistant construction technologies in the areas vulnerable to earthquakes

Create awareness among communities residing in the earthquake zone regarding refuge, evacuation and first aid

Organize mock exercises/drills involving school children and community members for appropriate response to any serious earthquake event.

## NDMA

District Housing and Physical Planning Department

District Works department

Earthquake Reconstruction and Rehabilitation Authority (ERRA)

## Tsunami

The coastal areas need a comprehensive and long term development plan coupled with land use planning and byelaws for construction and placement of settlements.

An effective and well coordinated early warning system should be installed and make people aware of the Tsunami Risk.

## NDMA, PDMA and DDMA

Relevant Federal, Provincial and District Government Departments

NGOs

## Droughts

Undertake a detailed drought risk, vulnerability and capacity study.

Promote and support community seed banks

Promote and support mass tree plantation campaigns. The government should take the lead by planting trees with the support of local communities on government lands (reserved grazing lands, road sides, canal banks and river banks etc.

Promote technology of making fodder blocks, and modern fodder storage and supplementing techniques

Promote drought resistant and water efficient tree, fruit and crop varieties. The native trees, plants and crops resilient to drought conditions should be promoted.

Improve on farm water conservation and management techniques including sprinkle, drip and pitcher irrigation

District Environment department

District Disaster Management Authority

Dry Net (being coordinated by SCOPE, Karachi)

Ministry of Environment/Sustainable Land Management Project/UNDP

District Agriculture Department

Provincial Forest Department

TRDP

Local NGOs, CCBs and CBOs

## TOWARDS A SAFER FUTURE

## Epidemics

Establish an effective disease surveillance mechanism  
 Address issues that make the population vulnerable to epidemics like poor health infrastructure, poor sanitary conditions and practices  
 Devise mechanism to provide timely emergency health services especially in the aftermath of floods for both human and animal disease outbreaks.

District health department

Non government Organizations

CCBs/CBOs

## Water logging and salinity

Launch a massive land reclamation program aimed at controlling salinity and water logging. The major components of this program should include a comprehensive drainage program coupled with plantation of those tree and plant/crop species that survive in and help reclaim the land by controlling water logging and salinity.

District agriculture department

UNDP

FAO and IFAD

Non government organizations having experience of managing such programs.

CCBs/CBOs

NGOs  
Ministry of Environment

Ministry of Food and Agriculture

## Brackish and contaminated drinking water

Promote appropriate/low cost water purification technologies like Solar Water Disinfection (SODIS), Sand/Gravel filters, water boiling, solar desalination, and chlorination etc.

Make available drinking water testing facilities at local level.

Launch mass awareness campaigns especially targeting schools and educational institutions and make them centres of these activities.

Where resources permit, introduce reverse osmosis technique for water purification

Install water filtration plants

Install proper sewerage systems both in urban and rural areas

Ensure safe disposal of human excreta by installing appropriate waste water treatment before discharging waste water into water bodies.

Communities

District Education Department

PCRET

Organizations promoting SODIS and other water purification technologies

LHWs, UNDP, PCRWR

Ministry of Environment

Ministry of Special Initiatives which is responsible for installation of Water Filtration plants.

Fresh Water Action Network



## TOWARDS A SAFER FUTURE

## Poor sanitary conditions

Devise strategies for improved solid waste and waste water management in both urban and rural areas by capacitating and making accountable Taluka Municipal Administration

Launch mass awareness campaigns on personal and community health, hygiene and sanitation

Encourage and support models like Orangi Pilot Project (community built and managed sewerage systems) both in urban and rural areas.

Taluka Municipal Administrations

OPP

Plan

CCBs

NGOs

## Transport accidents

Ensure that highways, main corridors of movement within the district/intra-district roads and city roads are provided with proper road furniture and safety measures

Educate children and common citizen about road/traffic sense and precautionary measures

Strengthen road patrolling mechanisms

Establish first aid/emergency centres at convenient distances and locations on roads. These centres should be adequately staffed and equipped, and during normal days should render health services to common citizens.

Strengthen services including fire brigade and ambulance services

Undertake a study to document existing coordination mechanism between police, government rescue services, health facilities and non government emergency services like EDHI ambulance. Introduce appropriate reforms in the light of the findings of the said study.

Traffic police

Taluka Municipal Administration

National Highway Authority

Police Department

National Road Safety Program

Schools/Education Department

## Industrial pollution

Ensure that big industrial Units like sugar mills and cement plants and industries based in Nooriabad comply with National Environment Quality standards and use Self Monitoring and Reporting Tools.

Establish inter and intra district coordination for industrial waste management and protection of coastal and freshwater resources from pollution.

Executive District Officer Law and District Officer Environment

Local, national and international non government organizations.

## TOWARDS A SAFER FUTURE

Strengthen Citizen Watch Groups to ensure the industrial units' compliance with the environmental standards.

Employ polluters pay principle. A study can be undertaken to assess the environmental and health damages being caused by such units.

The actions which challenge 'the business as usual' approach of the powerful business concerns require citizen support and political will on part of those who are in charge of affairs. The institution of District Officer Environment and monitoring committees need to be strengthened and capacitated. The District Council may form a District Environment Monitoring Committee. Such a committee should also include local environmental experts and activists. The committee can also take technical support from relevant provincial and federal government departments like EPAs and non government organizations like IUCN, LEAD, PIEDAR, SDPI etc.

Monitoring committees

Environment Protection Agency and Department

Management of concerned industrial units.

Local NGOs and CBOs

Degradation of Indus delta

Destruction of mangroves

Sea Intrusion

The Indus Delta has shrunk to 10% of its actual size.

Implement and follow Indus Water Accord of 1991 by giving Sindh its due share from Indus water and also ensure that prescribed quantity of water from Indus is released downstream kotri barrage to push back the intruding sea.

Wide scale efforts by all to save the coast and delta from pollution, conservation of left out mangrove stock and afforestation of the delta.

Scrutinize all upstream Indus hydrological projects for their impacts on availability of water for Indus delta.

Create awareness especially in upstream Punjab and other provinces that sea and delta need their due share from Indus Water and Indus water going to sea is not wastage of precious water at all. It's the balance of nature and its right that we must create and respect, the campaign should emphasize upon.

Federal Government and all provincial governments

Indus River System Authority (IRSA)

Members of Provincial and National Assemblies representing Thatta

District Government

Right based and Environmental Organizations

Nationalist Parties of Sindh

CCBs/CBOs and coastal communities

## TOWARDS A SAFER FUTURE

Increasing use of chemical fertilizers

Promote organic farming by establishing farmer field schools and farmer resource centres that could provide on-farm training to farmers on organic farming practices and technologies.

Promote the rationale use of chemical fertilizers by offering organic alternatives

Promote kitchen gardening among females and smallholder farmers.

Promote composting techniques

District agriculture department

NGOs

CCBs/CBOs

## DEMOGRAPHY

High population growth rate

Design and manage a population welfare programme for the district

Make strategies for increased contraceptive use

Involve religious and community leaders/opinion makers in the population welfare programs

Ministry of Population Affairs

UNFP

Green Star Marketing and other such actors

NGOs

Marie Stopes Society

Population Welfare Council

## HOUSING

Existence of a large number of adobe and makeshift housing structures. Such houses are vulnerable to cyclones, heavy rains and strong winds.

Make available to poor households technology options on safer but low-cost and appropriate housing designs, construction materials and building techniques that match with local weather conditions, poor households' affordability, social and livelihood needs.

District Works and Services Department

Housing and Physical Planning Department

RSPs (Sindh Rural Support Organization)

Khushhali Bank

## TOWARDS A SAFER FUTURE

Low interest housing loans with easy repayment schedules for poor households especially in the vulnerable areas by involving organizations having experience and resources to manage such schemes. One such organization is Akhuwat which has designed zero-interest housing finance schemes by generating and managing resources from local philanthropists.

The district government should launch public housing schemes employing models like “Khuda Ki Basti” which could directly benefit the poor households who do not have lands and resources to construct their own houses.

First Micro Finance Bank

House Building Finance Corporation

PPAF

Akhuwat

Saibaan Organization  
(promoting Khudi Ki Basti Model)

Building and Construction Improvement Program of Aga Khan Foundation

1 in every 5 rural households do not have access to electricity

The district government should prepare a phased scheme for electrifying all the villages/hamlets in the district. Such a plan should be prepared in consultation with district council, concerned Taluka and union councils, members of provincial and national assemblies and WAPDA.

Introduce alternative energy technologies like solar panels, solar lanterns in villages not currently provided with electricity from national grid.

Thatta's Gharo corridor has found to be fit for producing electricity from wind energy. A Turkish firm has started installing windmills in the district. However first right on this potential of the district is of local population who should get subsidized electricity generated from wind energy. The provision of cheaper electricity in the district can attract industries and thus open economic and employment opportunities for the local population.

Provide soft loans to households to buy alternative energy equipments/devices

Local Governments

WAPDA

Pakistan Council for Renewable Energy Technologies (PCRET)

Alternative Energy Development Board (AEDB)

Private sector organizations engaged in manufacturing, import and installation of alternative energy generating devices.

## TOWARDS A SAFER FUTURE

A large majority of households are dependent upon biomass fuels for cooking using traditional stoves that waste a lot of fuel, energy and create smoke that is dangerous for the health especially of women and children.

Promote Improved mud and ceramic cook stoves

Promote biogas plants in villages by making available technical support, subsidy and low or zero interest loans.

Promote efficient solar heating and cooking devices by promotional campaigns and making available technical support, subsidy and low or zero interest loans

Subsidize (with a well designed program) LPG for the domestic consumers. This will lessen the burden on endangered mangrove forest resources of the district

Pakistan Council for Renewable Energy Technologies (PCRET)

RSPs

WWF

Fisher Folk Forum

Building and Construction Improvement Program (BACIP)

UNDP (Global Environment Facility/Small Grants Programme)

Thatta is found to have 15th rank out of 16th districts in terms of availability of flush latrines.

Facilitate communities access 'Open Defecation Free Initiative' of Khushhal Pakistan Fund

Health and hygiene awareness campaigns

Low interest housing improvement loans with easy repayment schedules

Promote Community Led Total Sanitation and Village level Integrated Sanitation approaches

Khushhal Pakistan Fund

Sindh Rural Support Organization (SRSO)

Orangi Pilot Project

Water Aid

PLAN Pakistan



## TOWARDS A SAFER FUTURE

A large proportion of both urban and rural households have no choice but to purchase water from private water suppliers. The issues of drinking water contamination causing a variety of diseases are severe.

Thatta has one of the biggest fresh water lakes of Pakistan- Keenjhar and huge quantities of water are supplied to Karachi from this source. However the local population has first right on this source and it should not be deprived of their basic right of getting clean drinking water. Appropriate arrangements should thus be made to give Thatta's population its due share from its own water resources.

The rainwater harvesting potential of the district should be fully exploited to provide water for irrigation and drinking. Arrangements should be made for the filtration at district and community levels.

Promote appropriate and low cost water purification technologies like Solar Water Disinfection, sand/gravel filters, solar desalination etc.

Install and properly maintain water filtration plants throughout the district.

Prepare a comprehensive and long term plan to supply clean drinking water throughout the district by sustainable exploitation of water resources of the district.

Provincial and District Governments

Pakistan Council for Research in Water Resources (PCRWR)

Pakistan Council for Renewable Energy Technologies (PCRET)

Local, national and International NGOs

Taluka and Union Administrations

## EDUCATION

Thatta has third least literate population in Sindh

Develop a long term Education Sector Master Plan for the district.

Encourage and support adult literacy initiatives of local, provincial and federal governments and those run by non government organizations.

Introduce and promote peer-literacy programmes (each one-teach one approach)

District Education and Literacy Departments

National Education Foundation

Plan International

Sindh Education Foundation

Citizen Foundation

## TOWARDS A SAFER FUTURE

The unemployed educated youth both male and female of the district should be encouraged to work as part time teachers provided they are given training and incentives. The district government should allocate sufficient funds in the annual budgets for literacy enhancement and take it as a top priority. Indus Resource Centre of Khairpur with the support of PPAF has initiated a new program in which educated women are being encouraged and provided training and financial support to open private schools in their communities. Such programs can be replicated in Thatta too.

Some local non government organizations have established cost effective and efficient education and literacy improvement programs. Such organizations need recognition, appreciation and support to extend their programs. However mechanism needs to be devised where such organizations could work in partnership with local governments.

Employ ICTs for increasing education and literacy. Such ICTs may include community radio, TV, village computer centres and mobile school programs for far flung communities of the district. Launch rigorous media and social campaigns for changing societal attitudes towards girls' education. These campaigns should specifically target, besides others, at opinion makers and local role models.

Ensure the availability of school teachers and basic facilities especially toilets, rooms and boundary walls in girls' schools. The vulnerable areas need preferential treatment in this regard.

Encourage the role of education monitoring committees of concerned local councils to improve the quality of education

Local councils  
monitoring committees

Local philanthropists

CCBs and CBOs

Indus Resource Centre

Pakistan Poverty  
Alleviation Fund (PPAF)

Aga Khan Foundation

Education monitoring  
committees of local  
councils

58% male and 60% female  
children aged 12-23  
months are yet to be fully

Immunized in Thatta.

Develop and implement a District Health Sector Master Plan which gives special treatment to the disaster prone locations and areas poorly served with the health services. The plan should contain appropriate strategies to address the health sector problems, the district suffers with.

Improve transport services both for communities and health staff

District Health  
Department

LHW programme

District and Provincial  
Government Health  
Departments

## TOWARDS A SAFER FUTURE

67% rural and 30% urban pregnant women do not consult a formal health facility for pre natal care.

40% urban and 80% rural women do not receive Tetanus Toxoid injections

Only 32% urban and 14% rural women receive formal post natal care.

50% deliveries in urban and 75% in rural areas take place at home.

The staff absenteeism and non availability of medicines, and poor accessibility are some of the major problems. The strategies to address them may include but not limited to:

More public investment in primary health care

Encouragement of private sector and philanthropists to provide health facilities. However an effective and transparent regulatory mechanism is required at local level.

Monitoring of the health delivery system by operationalizing and strengthening health monitoring committees of Union, Taluka and District Councils.

An effective complaint registration and redress mechanism to be managed not less than District Nazim or District Coordination Officer.

The vaccinators often remain unable to reach the fringing or harder to reach areas and thus many children in these areas are missed out. The vaccination staff should be provided with proper transport facilities and protection to reach and work in such areas. Further there is a need to create more education and awareness as in certain sections of society there are reservations regarding the effectiveness of the vaccination. These misconceptions and concerns should be addressed.

An effective community monitoring program led by the health monitoring committees of Union, Taluka and District Councils can contribute to great extent in making LHW program deliver its objectives.

The LHW program needs support and encouragement as it provides a vast network of somewhat trained and organized workforce. The non government organizations should make useful programme linkages with them. An appreciable effort in this regard is that set by Community Action Program- a small organization working in Faisalbad and Chiniot Districts of Punjab, that promotes solar water disinfection (SODIS) technology. With their determination, the SODIS technology has been included in the

Local and national NGOs  
RSPs

Local Philanthropists

NGOs/CCBs and CBOs

National level health  
programmes

Marie Stopes Society  
PAIMAAN

curriculum of LHWs at the national level. Inspirations can be drawn from such initiatives.

In the absence of formal health facilities and staff, the role of traditional birth attendants should not be overlooked. They are rendering a valuable service. However, these attendants need proper training and instruments. The local government or some non government organization should take the lead by establishing a proper and fully equipped training centre for training of traditional birth attendants. It can also provide employment opportunity to educated unemployed female youth at local level. Besides the traditional healers/hakeems should also be mapped and their prescription should be scientifically tested. If found workable and free from harmful side effects, their prescriptions and practices should be certified by the appropriate or concerned certification bodies.

## LIVELIHOODS

High unemployment rates  
and rapid migration

Thatta needs a comprehensive and well thought out economic development plan which could harness the economic potentials of the district. Some of these potentials includes a rich natural resource base including wind energy, tourism, neighbouring country's two of the biggest urban centres- Karachi and Hyderabad, and a large coast line.

Thatta has been a big centre of trade and crafts in the sub continent before the partition. There is a need to revive and modernize those crafts

Skill creation and skill enhancement programs are the need of the hour. The technical training institutions both in the government and non government sector capable of imparting marketable skills should be established.

Credit institutions offering affordable and appropriate credit schemes both for men, women and youth need to be mobilized.

In the poorer households both male and female children have important roles in contributing to household incomes. Special programs are needed that could help these children get education along with income earning skills. The '**karkhana schools**' (schools where children are provided education along with income earning skills. The products made by children in these schools are sold to market with which children are provided with stipends) hold lot of potential in this regard.

EDO Finance and Planning  
(as s/he is responsible to  
promote investment in the  
district)

SMEDA

Akhuwat

RSPs

EDO Community  
Development

District Education  
Department

EDO agriculture and  
livestock

Agri-business Support  
Fund (ASF)

Fisher Folk Forum

## TOWARDS A SAFER FUTURE

Special schemes should be introduced to develop and modernize the agriculture, forest, fisheries and livestock sectors in the district in general and in coastal areas in particular.

Small/cottage industries adding values to agricultural, timber, fisheries and livestock products should be encouraged and supported. Fisheries which provide a livelihood source for the local population should be exploited for introducing and developing fish products like '**Fish Leather**' and manufacturing of its products.

"Aik Hunar Aik Nagar" (One village-one product) program of SMEDA should be introduced and promoted.

Half of district's lands are not available for cultivation and this proportion is increasing steadily over the years

Declining livestock population

Deforestation

The north western hilly zone of the district is severely degraded.

Members of every union council are required by the Local Government System 2001 to launch and promote tree plantation campaigns. This legal provision should be operationalized. The local government should set plantation targets for each planting season and bring in place an effective mobilization, financing and monitoring mechanism.

The culture of raising tree sapling nurseries should be promoted especially among women and youth. This can provide them with additional incomes, livelihood options and sapling for plantation in the district.

The **school environment clubs** can provide impetus to tree plantation campaigns.

District Environment Department

Ministry of Environment

Provincial Forest Department

Education Department

Communities



## TOWARDS A SAFER FUTURE

The river banks, mangrove zone and vast rangelands in the district provide ample space to plant trees. The tree stocks in these areas can bring multiple benefits including protection sea erosion/intrusion, protection against wind erosion and cash incomes for their owners/planters. In districts like Thatta where huge tracts of lands are available; the local government should have the target of gradually increasing the forest/tree cover area.

Launch a comprehensive rangeland management and conservation program. An important component of such a program should be to introduce sustainable livestock management practices.

Union Councils and  
Union Administration

District Agriculture  
Department

National and  
International NGOs

CCBs/CBOs

#### Increasing dependence on ground water

Promote on and off farm water management techniques

Promote water conservation technologies and techniques like  
sprinkle and drip irrigation.

Water course lining

Irrigation department

District Agriculture  
Department

NGOs/CCBs/CBOs

Union Councils

#### Increasing use of chemical fertilizers

Promote organic farming by establishing farmer field schools and  
farmer resource centres that could provide on-farm training to  
farmers on organic farming practices and technologies.

Promote the rationale use of chemical fertilizers by offering organic  
alternatives

Promote kitchen gardening among females and smallholder  
farmers.

Promote composting techniques

District agriculture  
department

NGOs

CCBs/CBOs

## TOWARDS A SAFER FUTURE

The fresh water lakes like Keenjhar is suffering with problems of pollution

Organizations like WWF have been working for the conservation of Keenjhar for years. The experiences and learning they have gained should be transformed into a wider plan for saving Keenjhar from pollution and sustainable exploitation of its resources with active participation of its neighbouring communities.

Arrangements need to be made for the discharge of industrial waste from nearby Nooriabad Industrial state in a way that it does not find its way untreated to the lake.

A mass awareness campaign should be launched for tourists not to pollute the lake.

Thatta should be given its due share out of Indus's water so that lake could sustainably be recharged.

Prepare community volunteers who could act as watchmen to report and monitor the pollution, hunting of migratory birds and hazardous methods of fishing.

Federal, provincial and district governments

Federal EPA and Provincial EPD

Ministry of Environment

Pakistan Wetland's Programme/WWF

IUCN

Local NGOs/CCBs and CBOs

District Education department

Ministry of Tourism and Provincial Tourism Department

Nooriabad Industrial Association (if it exists)