Gujarat Infrastructure Development Board

Study of Saurashtra Coastal Corridor of Gujarat

Section 2 – Infrastructure Assessment

Final Report – February 2006

PRICEWATERHOUSECOOPERS

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LIST OF EXHIBITS

1 INFRASTRUCTURE ASSESSMENT

Roads

Current scenario and issues

1.1 National highways, which offer the best quality of roads at a width of about 12-14 meters, benefit only limited parts of Saurashtra region. The details below provide information on the description of the lane and the Talukas through which the National Highways pass.

Exhibit 1: Areas that are covered under NH

Name of National Highway	Name of main Talukas	Total Length in Kms	Lane description
Porbandar - Rajkot - Bamanbore Road (NH 8B)	Gondal, Upleta, Kutiyana, Ranavav, Porbandar, Rajkot, Bamanbore	214.80	Four and Two lane
Jetpur-Junagadh-Somnath (NH 8D)	Vanthali, Jetpur, Junagadh, Somnath, Keshod, Veeraval	127.75	Two Lane
Somnath-Una-Bhavnagar (NH 8E)	Kodinar, Una, Bhavnagar, Somnath, Mahuva	260.10	Two Lane

Source: PwC Analysis

1.2 The National Highways do not pass through the districts of Surendranagar, Amreli and Jamnagar. The key urban centres presented herewith within each district of Saurashtra are based on traffic and population density. All these centers require good connectivity. The urban centers of each district (town/city of each district) in Saurashtra Region are given in Exhibit 2.

Exhibit 2: Urban centers in Saurashtra

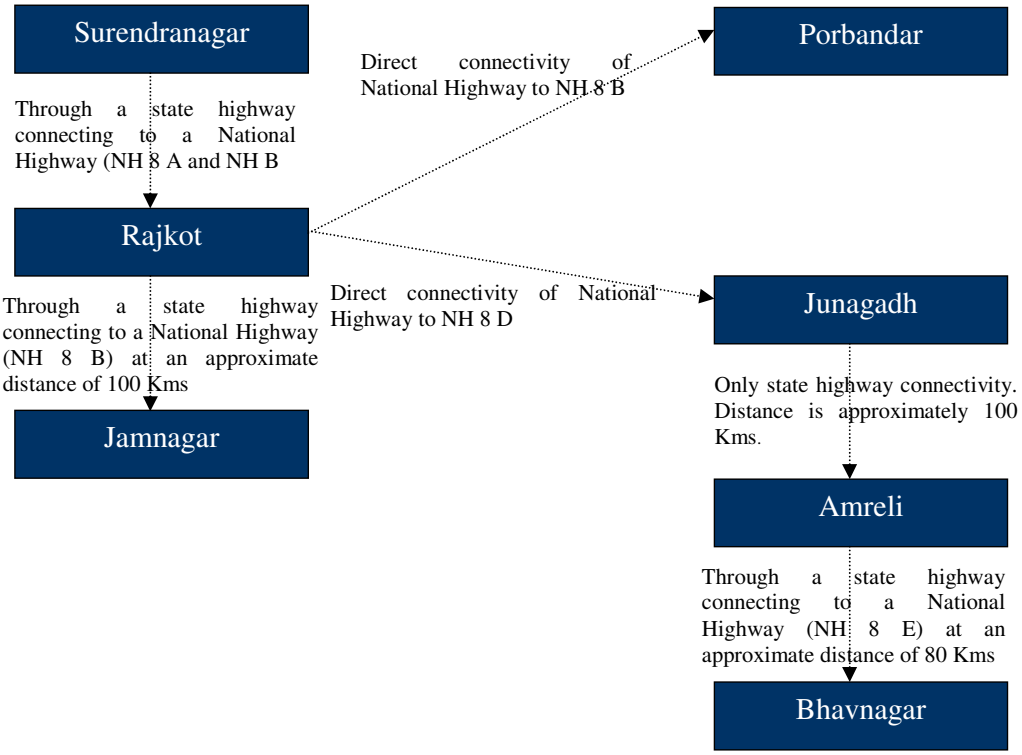
District	Main Urban area	Secondary urban area
Porbandar	Porbandar	Ranavav, Kutiyana
Bhavnagar	Bhavnagar	Botad, Mahuva, Talaja
Amreli	Amreli	Suvarkundla, Rajula
Surendranagar	Surendranagar	Dharangadhra, Wadhawan
Rajkot	Rajkot	Gondal, Dhoraji, Jetpur – Navgadh, Upleta
Junagadh	Junagadh	Veraval, Mangrol, Keshod, Vanthali, Una
Jamnagar	Jamnagar	NavgamGhed, Dwaraka, Salaya

Source: PwC analysis from Gujarat Road census

Inadequate connectivity between district headquarters within the region

1.3 The distances of main urban centers from the national highways and other districts are provided in Exhibit 3. It is evident that the main centers like Jamnagar and Bhavnagar are not connected to the National highway directly and the distances between these district and national highway is very large.

Exhibit 3: NH connectivity of Urban centers in Saurashtra



1.4 Exhibit 4 shows the width of state highways connecting the main urban centers.

Exhibit 4: Present condition of National highways connecting Urban centers

Details of National Highway	Width in Meters
Rajkot to Jamnagar	7.0
Rajkot to Bhavnagar	6.1
Surendranagar to Rajkot	7.0
Junagadh to Amreli	7.5
Amreli to Bhavnagar	7.0

Source: GIDB Vision document & consultation with GSRDC

Roads with high density of traffic but poor conditions

1.5 The movement of traffic between state and district roads was analyzed and the following roads have been identified as having high traffic density. It is evident that these roads have poor width with less than 7 meters. The minimum road width required for two-lane connectivity is 10-12 meters and none of the road stretches mentioned below have such width. The maintenance of these roads is very important to ensure smooth traffic movement.

Exhibit 5: Road width of high-density roads in Saurashtra

Road section	District	Road Width in meters
Ten Patiya-Jamjodhpur	Jamnagar	3.66
Paddhari - Mitana Raod	Rajkot	3.66
Kuvadava-Sardhr	Rajkot	3.66
Rajkot-Kotda Sangani	Rajkot	3.66
Movadi-Ravki Road	Rajkot	3.66
Dhangdhra-Maliya	Surendranagar	3.66
Gariyadhar-Noghanvadar	Bhavnagar	3.66
Sanosara-Noghanvadar	Bhavnagar	3.66
Bhavnagar-Trapaj	Bhavnagar	3.66
Chital-Amreli	Amreli	3.66
Amreli-Kunka vav	Amreli	3.66
Vanthali-Manavadar	Junagadh	3.66
Una-Jamvada Road	Junagadh	3.66
Lusana-Khokharda	Junagadh	3.66
Junagadh-Bhesan	Junagadh	3.66
Talala-Malia	Junagadh	3.66
Makam-Kodinar	Junagadh	3.66
Madhvpur-Pranchi	Junagadh	3.76
Palitana-Parvadi	Bhavnagar	5.5
Gondal-Bagasara	Amreli	5.5
Keshod-Mangrol	Junagadh	5.5
Keshod-Mangrol	Junagadh	5.5
Malia- Sasan Road	Junagadh	5.5
Delwada- Rajpara	Junagadh	5.5
J'gadh city Round Road	Junagadh	5.5
Porbandar-Adityana	Porbandar	5.5
Kutiyana-Mahiyari	Porbandar	5.5

Source: PwC analysis from Gujarat Road census

Last mile connectivity problems to ports and airports

1.6 The GIDB Vision 2020 report analyses the likely traffic movement of cargo from some ports. The details are provided in the following exhibit.

1.7 Ports like Bedi and Okha do not have two-lane connectivity. Further, state highways from Okha and Bedi port have very narrow width and require considerable improvements.

Exhibit 6: Port-wise movement of cargo traffic through roads.

Name of Commodity	Name of Port	Origin/destination
Grains/cereals	Bedi, Pipavav, Bhavnagar	Bhopal / Indore, Shahranpur, Mumbai
Sulphur	Bhavnagar	Gujarat, Rajasthan
Edible Oil	Bedi	Northern India, Madhya Pradesh
De-oiled cakes	Bedi	Madhya Pradesh
Bauxite	Okha	Bhatia
Fertilizer	Bhavnagar, Bedi	Gujarat

Source: GIDB Vision 2020

1.8 The distance between Porbandar city and the airport is about 8 Kms and this road is of poor quality[1].

Inadequate connectivity to agricultural markets in the region

1.9 Junagadh and Amreli

(a) These districts are among the main producers of groundnut and onion within the region. Most of the produce within the region is transported to districts like Rajkot, Bhavnagar and Jamnagar.

(b) The road connectivity between Rajkot and Amreli is of high quality and Junagadh and Rajkot are connected through a National Highway.

(c) Groundnut is also transported to other states via roads but the freight cost of sending truck containers is felt by industry representatives to be expensive. This is partly attributed to inadequate road connectivity to agricultural markets.

[1] Consultations with stakeholders

Difficulties in transport of materials by Major industries from region

1.10 Veraval[2]

(a) Indian Rayon has its major cement factory located in Saurashtra. This plant manufactures and transports yarn and Caustic Soda. The company claims to transport almost its entire produce by road to places like Surat, Delhi, Bangalore and Salem. Rail transport results in multiple handling and hence is avoided. The road between Surat and Veeraval is single lane link and has an approximate width of 7 meters thereby causing delays in dispatch of material. The company has expressed the need for a two-lane facility to connect the areas in this region where most cement industries are located and considerable volumes of cargo is transported through trucks. As mentioned in the railways chapter, a connecting rail link from Veraval to Kodinar and onwards to Rajkot would also help cement manufacturers in this region.

1.11 Porbandar[3]

(a) The road between Veraval and Porbandar (where most ship is transported) needs improvement and widening (it has a width of 6.5 meters).

(b) Most of the fish is transported from Porbandar to Dwaraka by road. Transport of fish from Porbandar to Dwaraka takes a long time because no national highway connects these two centres at present and the width of the state highway is around 7 meters only. Rail is usually not preferred by the industry to avoid multiple handling.

1.12 Rajkot[4]

(a) The machine tool manufacturers send the tools usually to districts like Ahmedabad and Vadodara. The National Highway 8A and 8B are linked conveniently so there are no issues with respect to quality of roads.

1.13 Jamnagar[5]

(a) Three large petro-chemical refineries have been set up - Reliance (annual capacity around 15 MMT), Essar oil Limited (annual capacity around 6 MMT) and Bharat Petroleum (annual capacity around 4 MMT). It is estimated that at least around 3000 tankers are transported via road to different parts of the state and country.

[2] Interactions with factory managers at Indian Rayon

[3] Interactions with sea food manufacturers

[4] Chairman of Machine Tools Association, Rajkot

[5] Interactions with Surendranagar Vikas Sansthan

(b) The tankers that go to Rajasthan and other parts of North India travel through a state highway and have to travel an additional distance of at least 170 Kms. Hence the increased expenditure on diesel by these tankers for traversing the extra distance works out to at least Rs. 9 crores.

(c) Many ancillary industries are also being set up in this region and the population growth rate is marked at around 22%.

Suggestions on way forward

1.14 The action steps to be taken in the roads sector in Saurashtra are detailed below.

Undertake Road project shelf converting Coastal Highways into National Highways

1.15 Declaration of Somnath – Porbandar – Dwaraka section as a National Highway will convert this road into a coastal highway with consequent benefits to industries such as tourism, transportation and other related benefits such as increased employment and disposable incomes. This work should be completed on a priority basis to ensure speedy traffic movement

1.16 The following coastal highways are proposed by Government of Gujarat for conversion into National Highways.

Exhibit 7: Proposed National highways in the region

Details of National Highway	Length in Kms
Bhavnagar-Vatnam-Padram to Kajran on NH 8	200
Malia-Jamnagar-Okha-Dwaraka	340

Source: Ministry of Shipping Road Transport and Highways

Undertake Road projects converting State Highways into National Highways

1.17 The Road and Bridges Department and GSRDC have provided us with a list of state highways that need to be converted into National Highway. We gather that this list has been sent to Government of India for approval.

1.18 GSRDC and R & B department have proposed these state highways for conversion based on traffic projections and population of the Talukas that come under the highway.

1.19 We agree to the following list of state highways for conversion[6] and feel speedy implementation of these roads would constitute an important action step to strengthening the road network in the Saurashtra region.

[6] Based on Consultations with Bhavnagar Industries Association, NRI Associations of Gujarat, ITI Bhavnagar

Exhibit 8: Proposed State Highways to be converted into NH

Details of State Highway	Length in Kms
Bagodara-Dhanduka-Vallabhipur-Dhasa-Amreli-Savarkundala-Rajula-Jaffrabad	265
Jaffrabad-Rajula-Savarkundala-Amreli-Babara-Jasdan-Vichiya-Sayala-Surendranagar-Patdi-Sami-Radhanpur	440
Bagodara-Dhandhuka-Bhavnagar	130

Source: Ministry of Shipping Road Transport and Highways

Roads proposed under PMGSY scheme

1.20 The following rural roads within the region have been proposed under the Pradhan Matri Gram Sadak Yojana (PMGSY) scheme which is yet to be completed. The status of completion of these projects is as follows. Our discussions lead us to believe that speedy implementation of these rural roads would give a string impetus to connectivity of rural areas in the region.

Exhibit 9: Financial progress of work in PMGSY (as on July 2004)

District	Sanctioned Amount (Rs Cr)	Value of work done (Rs Cr)	Payment made (Rs Cr)
Amreli	7.11	4.10	3.34
Bhavnagar	9.54	6.73	6.14
Jamnagar	28.76	65.51	12.60
Junagadh	5.59	5.07	4.66
Porbandar	5.34	3.45	2.85
Rajkot	8.86	4.96	4.56
Surendranagar	7.79	4.93	4.92

Source: PMGSY Website & GIDB Vision 2020

Undertake Road project shelf based on traffic projections from GIDB Vision 2020

(a) The following projects have been proposed phase-wise in GIDB Vision 2020 for Saurashtra based on traffic projections. Understandably, all the stretches cannot be developed simultaneously and there would have to be a prioritization among the shelf of projects.

Exhibit 10: Road projects proposed in GIDB Vision 2020

Road-section	Length (Km)	Width (M)	PCU	Tollable PCU	Projects to be Undertaken				Investments Phase-wise (Rs. Crores)			
					2005	2005-10	2010-15	2015-20	2005	2005-10	2010-15	2015-20
Babra – Amreli	28	7.00	6,651	75.00%	M[7]	M	10m	M	2.52	2.52	45.97	5.04
Bhavnagar – Dholka	195											
Bhavnagar – Talaja	54	7.00	10,027	86.00%	10m	M	4 lane	M	88.65	9.72	93.47	19.44
Bagodara-Dholka	25	7.00	11,982	72.00%	10m	4 lane	M	M	41.04	43.27	9.00	9.00
Bhavnagar Port- Road	10	7.00	6,777	78.00%	M	M	10m	M	0.90	0.90	16.42	1.80
Bilkh – Junagadh	17	N.A	N.A	N.A	M	M	M	M	3.06	3.06	3.06	3.06
Bilkha-Visavdar	18	7.00	6,421	68.00%	M	M	M	10m	1.62	1.62	1.62	29.55
Chotila – Anandpur	24	6.10	8,184	78.00%	M	10m	M	M	2.16	39.40	4.32	4.32
Dhandhuka-Bagodra	43	7.00	6,900	53.00%	M	M	10m	M	3.87	3.87	70.59	7.74

[7] M stands for maintenance works

Road-section	Length (Km)	Width (M)	PCU	Tollable PCU	Projects to be Undertaken				Investments Phase-wise (Rs. Crores)			
					2005	2005-10	2010-15	2015-20	2005	2005-10	2010-15	2015-20
Dhandhuka-Barwala	29	7.00	7,802	58.00%	M	10m	M	M	2.61	47.61	5.22	5.22
Dharangahdra – Maliya	49	3.66	3,942	76.00%	M	M	M	7m	0.98	0.98	0.98	10.29
Dhrol – Jodiya	20	6.10	9,580	83.00%	10m	M	M	4 lane	32.83	3.60	3.60	34.62
Dhrol – Latipur	15	6.10	5,551	73.00%	M	M	M	M	1.35	1.35	1.35	1.35
Gandevi – Alipor	15	5.50	15,040	63.00%	4 lane	M	M	M	50.55	5.40	5.40	5.40
Gogha - Vartej raod	18	7.00	19,242	78.00%	4 lane	M	M	M	60.66	6.48	6.48	6.48
Halwad – Morbi	48	7.00	4,914	86.00%	M	M	M	M	4.32	4.32	4.32	4.32
Jamnagar – Khambhalia	56	10.00	6,529	84.00%	M	M	M	M	10.08	10.08	10.08	10.08
Jodiya - Amran Road	31	9.75	13,556	88.00%	4 lane	M	M	M	53.66	11.16	11.16	11.16
Junagadh – Dhoraji	23	7.00	17,031	68.00%	4 lane	M	M	M	77.51	8.28	8.28	8.28
Morbi – Navlakhi	50	6.10	4,754	90.00%	M	M	M	M	4.50	4.50	4.50	82.08
Pipavav – Amreli	80	N.A	N.A	N.A	M	M	M	M	14.40	14.40	14.40	14.40
Porbandar – Mangrol	85	7.00	8,016	62.00%	M	10m	M	M	7.65	139.54	15.30	15.30

Road-section	Length (Km)	Width (M)	PCU	Tollable PCU	Projects to be Undertaken				Investments Phase-wise (Rs. Crores)			
					2005	2005-10	2010-15	2015-20	2005	2005-10	2010-15	2015-20
Porbandar – Miyani	36	7.00	6,231	62.00%	M	M	M	10m	3.24	3.24	3.24	59.10
Rajkot - Bhavnagar	179	6.10	9,926	89.00%	10m	M	4 lane	M	293.85	32.22	309.82	64.44
Rajkot-Jamnagar	86	7.00	21,394	84.00%	4 lane	M	M	M	289.82	30.96	30.96	30.96
Sarkhej – Dholka	28	7.00	8,204	56.00%	M	10m	M	M	2.52	45.97	5.04	5.04
Sasan – Visvadar	18	N.A	N.A	N.A	M	M	M	M	3.24	3.24	3.24	3.24
Sisodra – Mahuwa	25	5.50	6,850	72.00%	7m	M	10m	M	5.25	2.25	41.04	4.50
Surendranagar – Sayla	67	7.00	7,067.74	47.52%	M	M	10m	M	6.03	6.03	109.99	12.06
Than – Chotila	17	8.00	6,715	75.00%	M	M	10m	M	1.53	1.53	27.91	3.06
Vallabhipur – Bhavnagar	56	7.50	9,858	90.00%	10m	M	M	4 lane	91.93	10.08	10.08	96.93
Vallabhipur-Barwala	32	N.A	N.A	N.A	M	M	M	M	5.76	5.76	5.76	5.76
Veraval – Junagadh	78	N.A	N.A	N.A	N.A	N.A	N.A	N.A	N.A	N.A	N.A	N.A
Veraval – Talala	25	7.00	11,534.38	48.60%	10m	4 lane	M	M	41.04	43.27	9.00	9.00
Veraval	25	7.00	11,679	49.00%	10m	4 lane	M	M	41.04	43.27	9.00	9.00

Road-section	Length (Km)	Width (M)	PCU	Tollable PCU	Projects to be Undertaken				Investments Phase-wise (Rs. Crores)			
					2005	2005-10	2010-15	2015-20	2005	2005-10	2010-15	2015-20
Talala-Sasan												
Viramgam – Mandal	24	7.00	6,685	64.00%	M	M	10m	M	2.16	2.16	39.40	4.32
Viramgam - Surandra Nagar	67	7.00	9,361	48.60%	10m	M	M	4 lane	109.99	12.06	12.06	115.97

Source: GIDB Vision 2020

1.21 Exhibit 11 provides the roads ranked as priority based on the following criteria be among these projects:

(a) Expected PCU (i.e.. volume of traffic – whether it is high density corridor or not)

(b) Population of the talukas it serves (i.e.. Whether it connects important economic centres or not)

(c) % tollable traffic (i.e.. whether a revenue model can be established if awarded on a concession to the private sector)

Exhibit 11: Road projects prioritized based on projections

Road-section	Length (Km)	Width (M)	PCU	Tollable PCU	Projects to be Undertaken				Investments Phase-wise (Rs. Crores)			
					2005	2005-10	2010-15	2015-20	2005	2005-10	2010-15	2015-20
Bhavnagar – Talaja	54	7.00	10,027	86.00%	10m	M	4 lane	M	88.65	9.72	93.47	19.44
Halwad – Morbi	48	7.00	4,914	86.00%	M	M	M	M	4.32	4.32	4.32	4.32
Jamnagar – Khambhalia	56	10.00	6,529	84.00%	M	M	M	M	10.08	10.08	10.08	10.08
Jodiya - Amran Road	31	9.75	13,556	88.00%	4 lane	M	M	M	53.66	11.16	11.16	11.16
Morbi – Navlakhi	50	6.10	4,754	90.00%	M	M	M	M	4.50	4.50	4.50	82.08
Rajkot - Bhavnagar	179	6.10	9,926	89.00%	10m	M	4 lane	M	293.85	32.22	309.82	64.44
Rajkot-Jamnagar	86	7.00	21,394	84.00%	4 lane	M	M	M	289.82	30.96	30.96	30.96
Sarkhej – Dholka	28	7.00	8,204	56.00%	M	10m	M	M	2.52	45.97	5.04	5.04
Vallabhipur – Bhavnagar	56	7.50	9,858	90.00%	10m	M	M	4 lane	91.93	10.08	10.08	96.93
Viramgam – Mandal	24	7.00	6,685	64.00%	M	M	10m	M	2.16	2.16	39.40	4.32
Viramgam - Surandra Nagar	67	7.00	9,361	48.60%	10m	M	M	4 lane	109.99	12.06	12.06	115.97

Speed up implementation of Roads proposed by R & B Departments

1.22 Roads proposed by each of R & B department in corresponding districts are provided in the Annexure. These represent two categories:

(a) Comprehensive New Connectivity Priority List (CNCPL): These lists are provided by the department based on anticipated demand for new roads within each district

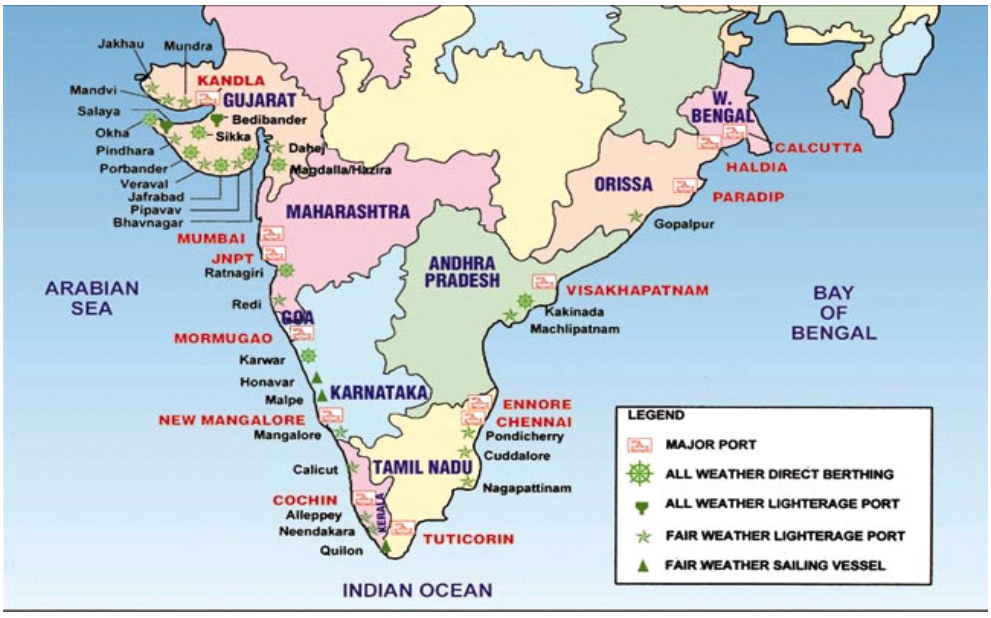
(b) Comprehensive Upgradation Priority List (CUPL): These lists are provided by the department based on required maintenance within roads in each district.

Ports

Overview of Indian Port Sector

1.23 Ports, the gateways to India's International trade by sea, handle over 90% of foreign trade. There are 12 Major Ports & 185 Minor/Intermediate ports along the 7,918 km long coastline of the country. A pictorial presentation of the Indian maritime infrastructure is given in Exhibit 12

Exhibit 12: Indian Maritime Sector



1.24 The western ports, mainly in Maharashtra and Gujarat, besides serving their respective domestic markets also play an important role in serving the Northern and Central hinterlands.

1.25 The state-wise coastline and ports are given in Exhibit 13. It can be seen that both the east as well as the western coastline of India have a number of large, small and medium port facilities to handle international, regional and coastal shipping cargo.

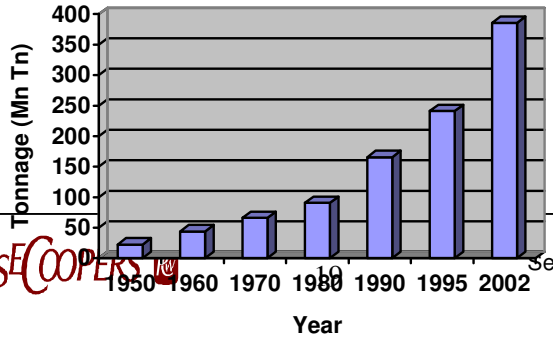
Exhibit 13: State-wise Coastline & Ports

States/UT	Coastline (KM)	Major Ports	Non Major Ports
Gujarat	**1615**	**1**	**40**
Maharashtra	653	2	53
Goa	118	1	5
Daman & Diu	43	-	2
Karnataka	280	1	9
Kerala	570	1	13
Lakshadweep	132	-	10
Tamilnadu	906	3	14
Pondicherry	31	-	1
Andhra Pradesh	974	1	12
Orissa	476	1	2
West Bengal	158	1	1
A & N Islands	1962	-	23
Total	7918	12	185

Source: DG Shipping

1.26 Approximately 95% of India's foreign trade by volume and 70 per cent by value is handled by sea. Hence, ports have become an important facility in the trade and commerce activity of our country. Import and Export cargo coming into and going out of India have traditionally been handled through the Major Ports. Growth trends in the cargo handled at the Indian Ports are shown in Exhibit 14.

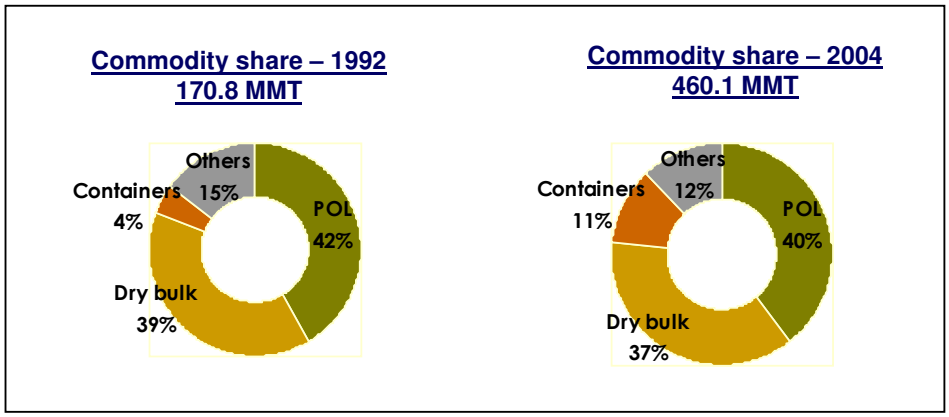
Exhibit 14: Trends in Cargo Traffic at Indian Ports



1.27 However, the share of major ports in the total cargo handled has witnessed declining trend *(in percentage terms)* over the years. For example, the major ports handled 93% of the total cargo in 1985-86 while their share reduced to 76% by the year 2003-04. This decline could be attributable to development of the handling facilities at the minor ports of the country.

1.28 With India witnessing stable economic development in the past and the resultant increase in cargo traffic at the Indian ports, the cargo profile too has undergone substantial change. Change in cargo profile on a pan India level is shown in Exhibit 15.

Exhibit 15: Trends in Cargo Profile



1.29 In view of the change in cargo profile towards containers, the infrastructure facilities at various ports across India are also being geared up to handle specific type of cargo. The cargo handling facilities on a regional basis is follows:

(a) The western ports in Maharashtra, Gujarat and Goa mainly handle Containers, POL and Iron Ore in addition to miscellaneous cargo.

(b) Southern Ports in Tamil Nadu and Kerala mainly handle FRM, Containers and Coal. (Chennai and Kochi are among the largest handlers of oil. Chennai is also big in Iron Ore).

(c) Eastern Ports in Andhra Pradesh, Orissa and West Bengal mainly handle Iron Ore, Coal and FRM.

(d) In addition to the above, Southern Gujarat has become an important landfall point for importing and supplying Liquefied Natural Gas into the country.

1.30 Key growth drivers in the Indian Ports sector can be summarized across three main categories as shown in Exhibit 16.

Exhibit 16: Growth factors and drivers in the ports sector

Growth factor	Growth driver
Macro economy	■ Growth in trade ■ Growth in economy of the hinterland
Cargo related	■ Growth in containerisation of containerisable cargo ■ Origin-destination of cargo (how does this contribute to growth?) ■ Increase in trans-shipment of cargo ■ Competition from other means of transport (is this a growth driver?)
Port related	■ Availability of connectivity ■ Availability of facilities/infrastructure at port ■ Quality of services ■ Competition from other ports

Current scenario and Issues faced at the ports within the Saurashtra region

Cargo handled in ports

(a) Maximum number of ports in Gujarat is located in the Saurashtra region.

1.31 Exhibit 17 below presents an analysis of all ports in the region, their current capacities and expected traffic in 2010. The different hinterlands served by the region are also indicated.

(a) As per

(b) Exhibit 17, Sikka, Pipavav and Bedi face a demand-supply gap by the year 2010.

(c) Amongst the ports in Saurashtra region, around 80% of cargo handled at these ports serves only Gujarat[8] and ports like Bedi, Jafrabad and Navlakhi cater to the Northern hinterland. The current scenario indicates that there is a gap between present trend and Gujarat's vision for the sector. *(Gujarat's vision is to handle 35% of cargo through-put of entire country and 100% of Northern Hinterland cargo by 2020)*

[8] Based on calculations from

Exhibit 17

(d) Also, Pipavav, Sikka and Bedi are the only ports which handle most Liquid Bulk. According to GIDB's Vision 2020, the CAGR of traffic movement of Liquid Bulk (in recent past) is much higher than that of dry bulk.

(e) The Vision 2020 also states that traffic movement of containers have increased by a CAGR of 170% from 2000 to 2003. But out of all the ports in the region, only Pipavav has container cargo movement. Container handling facilities are now being set up in Mundra and Kandla.

(f) The current ship sizes in the region in ports like Pipavav, Okha and Bedi are ranging from 5000 tonnes to 35000 tonnes for dry bulk. The size of containers range from 1000 TEUs to 2000 TEUs. The average ship sizes in Port of Singapore range between 1 Lakh to 1.5 Lakh Tonnes.[9]

Exhibit 17: Details of Cargo handled in Saurashtra Ports

Name of Port	Cargo Capacity (mmtpa)	Hinterland Regions Served	Projected Traffic (2010)	Type of Port
Okha	3.96	Gujarat	2.05	GMB port
Pipavav	9.41	Gujarat	20.58	Private sector
Jaffrabad	3.02	Mumbai, Magdalla	1.58	GMB port
Navlakhi	2.82	Rajasthan, Punjab, Uttar Pradesh	1.71	GMB port
Bedi	5.69	Maharashtra, Gujarat, Rajasthan, Punjab, Haryana Uttar Pradesh	7.8	Joint sector
Porbandar	5.26	Gujarat	2.41	GMB port
Sikka	57.57	Gujarat	77.05	GMB port
Bhavnagar	1.18	Gujarat	0.51	GMB port
Simar	N.A.	Gujarat	N.A.	Proposed port
Veeraval	2.17	Gujarat	0.33	GMB port
Postira	N.A.	Nil	N.A.	Proposed port
Muldwaraka	7.17	Mumbai	4.19	Private sector
Mithivirdi	N.A.	Nil	N.A.	Proposed port
New Bedi	0	Nil	7.8 (2013)	Proposed port

Source: GMB Website and GIDB Vision 2020

[9] Interactions with GMB

Infrastructural issues at ports

1.32 Porbandar, Okha, Muldwaraka, Jaffrabad, Bhavnagar, Pipavav and Sikka are the ports that have direct berthing facilities. Ports like Okha and Porbandar have direct berthing facilities of less than 15000 DWT. The Vision 2020 document envisages need for converting ports with lighterage facilities into direct berthing facilities because of high demand of such facilities.

1.33 There are no cold storage facilities available in any ports of the region. This is in spite of the fact that fish and fruits are transported from Porbandar and Veeraval.[10]

Connectivity issues at certain ports[11]

1.34 Most roads from ports (Bhavnagar, Veeraval, Porbandar, Okha, Pipavav etc) are currently only 7 meters in width and these are needed to be increased to 10 meters. The road between Navlakhi to Morbi (to connect to National Highway 8A) is currently single lane and needs improvement in quality.

1.35 Bedi port has a broad gauge facility at a distance of about 15 Kms from the site. The road connecting the port site and railway station is in need of improvement.

1.36 Jafrabad port is connected via meter gauge through Rajula. This needs last mile broad gauge connectivity.

Suggestions based on current scenario

Strategic Utilization of Captive Jetties

1.37 On comparing the traffic trend between captive jetties and third party cargo at GMB ports from 1999 to 2003, it is evident that captive cargo has witnessed a CAGR of 44% whereas third party cargo traffic in GMB has grown at a CAGR of 16%.[12] How do ports in Saurashtra compare with Gujarat in general?

[10] GMB year book- 2002-03

[11] Stakeholders' consultations and GIDB Vision 2020

[12] PwC analysis

1.38 Having analyzed the specific clauses in Port Policy and GMB Act, it is evident that these captive jetties can handle third party cargo only up to 50% of their internal cargo capacity. We also gather from stakeholder discussions that these jetties at present have relatively better facilities than those at GMB ports.[13]

1.39 Considering the above and in order to attract more cargo, we propose that the norms in the policy could be relaxed to eable the Captive Jetties to handle more third party cargo but at the same time the charges payable to GMB for such "additional handling" could be same as paid by other minor ports in Gujarat. Further, this relaxation could be provided for certain fixed period until such time that additional port facilities come up at the other GMB ports. This period could be decided based on the GMB ports identified for development and the time frame required for completing improvement investments.

1.40 In addition to the above, some relaxation in charges could also be given to Captive Jetty owners for "additional guaranteed" number of vessel calls by Shipping Lines that are presently *NOT* calling at any port in Gujarat. This above relaxation could be revised on yearly basis depending on the additional guaranteed vessel calls. The benefits from this approach could be:

(a) There will be level playing field for all the ports in Saurashtra

(b) Minimum guaranteed increase in the total number of vessel calls

(c) Overall increase in the cargo handled in the Saurashtra region

(d) Reduction in loss of cargo to JNPT and Mumbai Port

(e) Government shall get time to develop other potential ports and bring them at par with the existing captive jetties without loss of cargo to ports in other states

1.41 We suggest a detailed study to asses the feasibility of such relaxation and to decide upon the extent of relaxation. (Is this legally possible? Has it been done anywhere else?)

Overcome competition from other states

1.42 Exhibit 18 shows the comparison of key port policy elements of Maharashtra and Gujarat. Maharashtra Government plays an extended role in privatization, mainly in the areas of acquisition of land and sharing of the cost of construction. Additionally, the concession period provided by MMB is 66% more than that in Gujarat.

[13] Stakeholders consultations

Exhibit 18: Port Policy review

Policy Dimension	Gujarat	Maharashtra
Basis of development	Build Own Operate & Transfer	Build, Own, Operate Share & Transfer basis
Period of concession	30 years	50 years (including 5 yrs for construction period)
Responsibility for acquisition of land and development of related infrastructure	GMB plays a role only if port is developed on joint sector basis	MMB
Cost of construction of approach road	Case to case basis	To be shared equally with MMB and developer

Source: Interactions with GMB and MMB

1.43 If the concession period is made equivalent to 50 years by GMB, the following benefits could be derived:

(a) Facilitation of phased investment in a port

(b) Long-term contracts to other service providers at the port leading to achieving economies of scale. These measures could enable the port to pass on a percentage of the cost reduction to the private players in terms of reduced charges leading to increase in traffic.

(c) The other aspects of the privatization policy should be reviewed and adequately moulded to match the policy of MMB.

Improvement in existing ports

1.44 The GIDB Vision 2020 report suggests that Porbandar, Veeraval, Okha and Jaffrabad can be developed as Fishery ports. The suggested investment outlay as per the GMB year book is presented in Exhibit 19 below.

Exhibit 19: Investment outlay for Saurashtra ports

Name of Port Project	Investment Outlay in Crores
Okha Minor Fishery Harbor Project	25.02
Veeraval Minor Fishery Project	43.26
Porbandar Fishery Harbor Project	25.00
Jaffrabad Fishery Harbor Project	14.95

Source: GMB year book 2002-03.

1.45 We recommend that the investment required at the ports mentioned in Exhibit 19 for development of facilities for safe operations *(minimizing the loss of fish)* should be assessed. If the viability of such investment is established then the amount should be invested to maintain threshold level of safe operations at these ports.

1.46 Private parties could be invited for developing Cold Storages at the ports mentioned in Exhibit 19. The tenure for such "development & operation" of the cold storage shall depend on the time frame envisaged for overall development plan of the ports under consideration.

Detailed Feasibility Study

1.47 We recommend that the a detailed feasibility study be carried out for Okha and Bedi Ports mainly considering the following:

(a) Existing cargo profile v/s future of the cargo handled i.e. containerized or non-containerized, especially considering the expansion as well as new facilities at Mundra and Kandla

(b) Projected traffic and the demand supply gap

(c) Adequacy of existing facilities / infrastructure to cater to the foreseen changes in cargo profile

(d) Hinterland connectivity

(e) Accessibility of nearby facilities to the same hinterland markets

(f) Nature and extent of competition from Mundra and Kandla Port and advantage of Okha and Bedi

(g) Possibilities of shifting of existing cargo to other ports in the vicinity

(h) Likely competition with the container terminal proposed to be developed by Shell at Hazira

(i) Investment required to bring the port at par *(including the investment for improving connectivity)* with the competing ports and financial feasibility of the same

(j) Increased investment in the Pipavav Port

Phased Development with Private Participation

1.48 In case the feasibility of investment in the fisheries port or any other port is established, we propose prioritization of port development in a phased manner. Some of the key parameters that should be analyzed while prioritizing could include:

(a) Existing infrastructure

(b) Investment requirement

(c) Demand Supply Gap

(d) Type of cargo handled

(e) Available draught

(f) Hinterland connectivity

1.49 Having prioritized the ports to be developed, private sector participation can be structured considering the following:

(a) Government should hold equity in the SPV entrusted with the task of constructions of the port / improvement of hinterland connectivity. Further, this equity could be diluted over a period of time so as to unlock the funds and invest them in other projects where the financial support is required.

(b) The incentives for the private sector shall be clearly identified for the port to be developed and must be explicitly stated in the RFP

(c) Concession periods should be decided based upon the investment required and the strategic importance of the port.

1.50 We present below in Exhibit 20, an abstract of the checklist proposed by World Bank for "Negotiating a Terminal Privatization" (globally). We propose the same could be referenced for negotiation with the private parties, in case some new ports are decided to be privatized.

Exhibit 20: Negotiating a Terminal Privatization

The Proposed Transaction
■ What area and specific activities in the port are to be privatized in the transaction — and what is not included in the transaction?
■ What modality is best suited to the transaction — outright sale of assets and land, long-term lease of the facility under concession arrangement, management agreement to operate the facility, other?
■ Who will prepare the term sheet to be presented to the proposed contractor and what schedule will be set for completing the transaction?
Structure of Payment to the Government
■ How the compensation is to be structured — is there an initial cash payment to the government or is the proposed compensation to the government based on some form of rent, revenue sharing, royalty or other deferred payment arrangement?
■ What is the discounted present value of the initial payment and flow of deferred payments from the proposed contract?
■ How does this discounted present value compare with the discounted present value of the projected profits or surpluses of the terminal as currently operated?
Risk Being Assumed by the Government

- In the event of losses being incurred by the contractor under the proposed agreement, will in any circumstances the government be liable for these losses?
- Under what circumstances can the proposed contractor hold the port authority or government responsible for terminal disruptions, missed performance targets, unexpected operating costs, etc.?
- Is there any possibility that the government could directly incur losses under the agreement?

Performance Targets

- What throughput does the proposed contractor project for the terminal over the next ten years from local traffic, transit traffic and transshipment traffic?
- How does the proposed contractor plan to reach these throughput projections?
- Does the proposal state targets for increasing minimum productivity standards (e.g., minimum average crane moves per hour) in the terminal?
- How does the proposed contractor plan to reach these minimum productivity targets?
- Is there a provision for penalties and incentives in the proposal for meeting the planned throughput and productivity targets?
- What assumptions has the proposed contractor made, or conditions has it set, as to the role of the port authority and/or government in achieving these targets?

Operational Issues

- What services are to be provided by the port authority to the terminal after takeover by the proposed contractor — and how will these services be paid for?
- Who will be responsible for maintaining the civil structures and water depth alongside the quay?
- Will the proposed contractor provide new management and senior operating personnel — if so, who will they be and what will be their qualifications?
- How many personnel does the proposed contractor plan to employ in the terminal?
- Will existing personnel in the terminal have priority for future job positions in the terminal after take over by the proposed contractor?
- Will the proposed contractor utilize the salary level and structure currently in effect for personnel employed in the container terminal — if not, what will be the changes?
- What interaction does the proposed contractor foresee with other service providers operating in the port and how does it plan to cooperate with the other providers?
- If a concession or management agreement, will the port authority have full and unfettered rights at all times to enter and inspect the terminal after transfer to the contractor?
- Will the proposed contractor carry all-risk and liability insurance on the container terminal, what specific risks will be covered, what will be the limits on liability coverage and will insurance cover the actual cost of replacement of the equipment?

Terminal Handling Charges

- What structure and level of terminal handling charges does the proposed contractor plan to impose on containers and other cargo through the terminal?
- How much profit is built into these charges?
- Are these charges competitive with other ports in the region?
- What role will the government have in reviewing and approving any changes in the structure or level of container handling charges?
- If the contract provides for revenue sharing, what portion of terminal handling revenue is to be paid to the government?
- What process is to be employed to ensure that the government receives all of the compensation it is due?

Potential Contractual Conflicts

- Are there provisions for terminating the contract with the proposed contractor should terminal throughput and/or productivity targets not be met if so, what is the process for terminating the contract?
- What provisions has the proposed contractor included in the proposal concerning its obligation for payment of taxes to the government?
- Will the proposed contractor provide a bank guarantee as security from the time the government accepts its proposal until the handover is complete?
- What performance guarantee will the contractor provide as security for complying with the obligations taken on in the proposed contract?

Handover of the Terminal

- What is the proposed timing of the handover of the terminal to the proposed contractor?
- What specific steps will be taken by the contractor to plan for and implement the handover?
- Will the proposed contractor have transition personnel in the terminal for a time period preceding the handover to organize the process and how will these personnel interact with the current staff?
- What is the role of the port authority in the handover process?
- What responsibilities will the port authority and government continue to have after the transaction?

Terminal Development

- What commitments are being made by the proposed contractor to improve and expand the terminal?
- What type of training program will be provided by the proposed contractor for terminal personnel?
- Will the proposed contractor install a world class computerized information system and in what other ports is this system now used?
- When will this system be installed?
- Will provision be made to connect this computer system to the current or future computer system operated by the port authority and to what extent will the port authority have access to data in the terminal system?
- What role does the proposed contractor envisage for the port in competing for transshipment business with other ports in the region and are there any potential conflicts of interest as a result of the proposed contractor operating terminals in one or several of these other ports?

Source - World Bank Port Reform Tool Kit

Improvement of Connectivity

1.51 According to the Vision document, all ports having more than 1 million tonne capacity needs to have four-lane road connectivity. The ports that have such capacity within the region are Navlakhi, Okha, Sikka, Bedi, Bhavnagar, Jaffrabad, Pipavav, Muldwaraka, Porbandar and Veeraval. We propose that this plan be implemented as this would be facilitate intra-country movement of goods and passengers thereby increasing the share of Gujarat. However, port specific connectivity (mainly of Okha and Bedi) is to be decided based on the outcome of the port development decision taken by GMB. Cost estimates?

1.52 The vision document provides a list of projects that need rail connectivity upgradation which is provided in the Exhibit 21 below

Exhibit 21: Projects in railways for ports sector

Rail Line	Length in connectivity (km)	Specification	Phasing
Okha Railway line	5	Last mile connectivity	Immediate
Bedi Railway Line	5	Last mile connectivity	Immediate
Porbandar	20	Connectivity from town	2010
Veeraval	20	Connectivity from town	2010
Sikka	5	Last mile connectivity	Immediate

Source: GIDB Vision 2020

1.53 We propose that the connectivity of Okha and Bedi be decided based upon the outcome of the feasibility study proposed by us. The connectivity to Sikka can be an integrated effort by the government and private players, but to make it a success government might have to consider relaxation to private players for handling third party cargo.

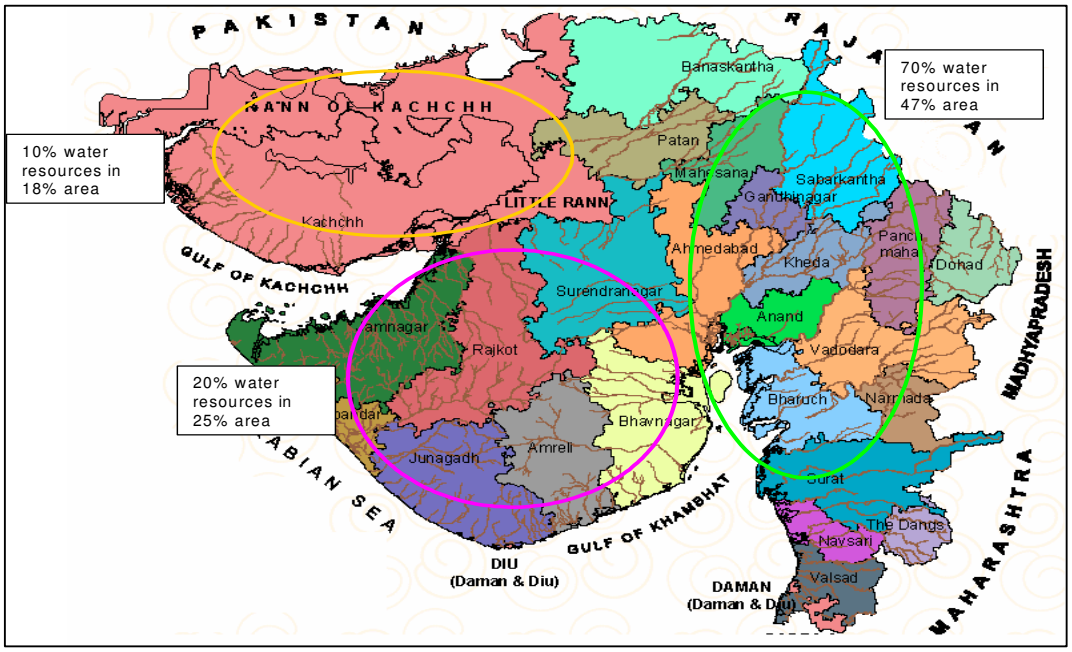
Water

Assessment of existing infrastructure in Gujarat

1.54 A graphic representation of water resources available in Gujarat State is shown in

1.55 Exhibit 22.

Exhibit 22: Gujarat Water Resources



1.56 Key statistics with respect to water scenario in Gujarat are:

(a) 1600 km long coastline causing salinity ingress

(b) 66% of the land area unsuitable for groundwater development

(c) Large number of people suffer from Dental & Skeletal Fluorosis

(d) 26 out of 76 years have been drought years in Gujarat

Water supply in Saurashtra

1.57 Saurashtra has several small and large seasonal rivers constituting 84 river basins with major rivers being Shetrunji, Machchhu and Bhadar.

1.58 High levels of salinity have affected approximately 1048 villages in the State and areas spanning over 35000 km. The groundwater in these areas is not potable as per WHO standards. The coastal areas in Saurashtra (between Una and Madhavpur) and Kutch have shown high salinity levels. Further, groundwater in Saurashtra is unfit for irrigation.

1.59 Estimates of total renewable freshwater available in Saurashtra is shown in Exhibit 23.

Exhibit 23: Freshwater availability in Gujarat

Region	Total freshwater availability (MCM)	Population (million)	Per capita freshwater availability (M^3/Year)
Saurashtra	9287	12.64	734

Source: GWIL

1.60 The most widely used criterion for water scarcity is the benchmarks set by M. Falkenmark. As per this criterion, if level of annual supplies falls below

(a) 1700 M^3 then there will be local shortages of water

(b) 1000 M^3 then water supply begins to hamper health, economic growth and human well being

(c) 500 M^3 then water availability becomes a primary constraint to life.

1.61 The per capita freshwater availability in Saurashtra is 734 $M^{3,}$ a level that suggests that water supply hampers health, economic growth and human well being. The health and human well-being issues stemming from water scarcity have been discussed in a separate chapter of this report. Further, Saurashtra is the second worst affected in Gujarat due to unavailability of adequate freshwater resources.

Current scenario and issues in water supply in the region

1.62 On an average, 17 of the 25 districts in Gujarat face severe water scarcity. Cities such as Rajkot and Jamnagar are supplied with water for 2-3 days in a week while the situation in rural areas is much worse. More than 3000 villages are supplied water through tankers.

1.63 High levels of salinity have already affected approximately 1048 villages in the State and areas spanning over 35000 km. The groundwater in these areas is not potable as per WHO standards. Coastal areas in Saurashtra (between Una and Madhavpur) and Kutch have shown high salinity levels. Further, groundwater in Saurashtra has already become unfit for irrigation while that in North Gujarat is increasingly becoming unfit for irrigation.

1.64 Our discussions with stakeholders in water sector have brought out certain difficulties as well as issues in availability, treatment and distribution of water in each district within the region. Exhibit 24 shows a summary of the discussions held with stakeholders.

Exhibit 24: Issues faced by consumers- district wise

Porbandar	Amreli	Bhavnagar	Jamnagar	Junagadh

Porbandar	Amreli	Bhavnagar	Jamnagar	Junagadh
■ Though there is high saline and nitrate content in water, there is only one desalination plant in Mocha ■ Cost of setting up and maintaining a desalination plant is high (at least Rs.10 per litre) and hence it is unviable to set up such plants ■ Absence of water recharge facilities within the district ■ Production and productivity are directly affected within the district due to irregular water supply	■ Water supply is very irregular- supply is once in eight days for about eight hours ■ No tanker facilities available for residents ■ No water filtration plants available within district ■ The water pipeline within district is very old and breaks down at regular intervals	■ Recovery of water charges is as low as 20% from village Panchayats (who take care of internal distribution networks)	■ City has supply of water only once in 2-3 days	■ High content of nitrate in water ■ Around 450 villages within the district are yet to receive water from the grid constructed to supply from dams of Mahi, Ojak or Narmada. ■ Water cost recovery is very low. (Around 10%)

Source: Stakeholder Consultations

Impact of Narmada Water on Saurashtra

Summary of Sardar Sarovar Dam

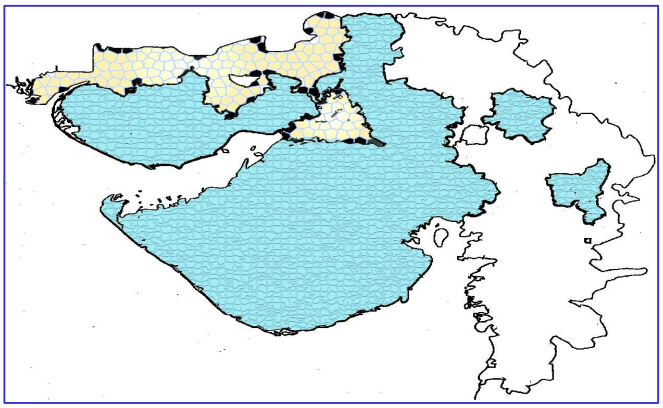
1.65 The Narmada Tribunal has allocated 11 million acre feet of water for entire Gujarat. Out of this, 1.06 million acre feet of water is allocated for non agricultural and domestic use (i.e.. around 3500 million litres per day).This water will serve all villages, towns and cities of Saurashtra and Kutch region. Currently, 32 towns and 1800 villages of Saurashtra are receiving drinking water from Narmada and rest is expected to be completed by 2007.

1.66 The rest of the available water (9.94 Million acre feet) is allocated for irrigation.

1.67 The Saurashtra branch canal has two sub-branches- the Vallabhipur branch leading to South west region of Saurashtra and the Maliya branch leading to North-West region of Saurashtra. New branches at Morbi (near Rajkot) and Dhangadra (near Surendranagar) are being built. The branch canal will bring 400 MCM of water which will be distributed to these sub branches.

1.68 To ensure drinking water supply in all villages in Saurashtra and Kutch by the year 2007, Government of Gujarat has formed various entities and departments to take responsibility for bulk transmission and internal distribution network.

Exhibit 25: Areas covered under receive Narmada Water



Administrative set up of water supply department in Gujarat

1.69 Sardar Sarovar Nigam Limited (SSNL) is an extended arm of the government formed to construct and manage Sardar Sarovar Dam and its respective canals. The construction of infrastructure for and supply of bulk water transmission is the responsibility of Gujarat Water Infrastructure Limited (GWIL). The pipeline network (last mile connectivity) for providing water up to the outskirts of villages/towns or districts are the responsibility of Gujarat Water Supply and Sewerage Board (GWSSB).

1.70 The village Panchayats or Municipal Corporations (as the case may be) provide water to the villages/towns/cities by setting up an internal distribution network.

1.71 GWIL buys bulk water for transmission from SSNL and GWSSB buys water for distribution from GWIL. GWSSB charges Urban Local Bodies (ULBs) that provide water through distribution network into the villages and towns.

1.72 Government of Gujarat has set up a planning authority called Narmada Planning Group that analyzed the demand for irrigation, drinking and non agricultural water up to the year 2021. It has estimated that 400 MCM of water is required for fulfilling demand for drinking water in Saurashtra and this demand can be met by Narmada water.

1.73 Based on these estimates, it seems that Narmada water would be able to mitigate the current water supply constraints in the region. Further, the Narmada Planning Group has also determined that there will be no requirement of groundwater recharge facilities in the region once Narmada water is available from 2007.

Status of Network roll-out of Narmada system

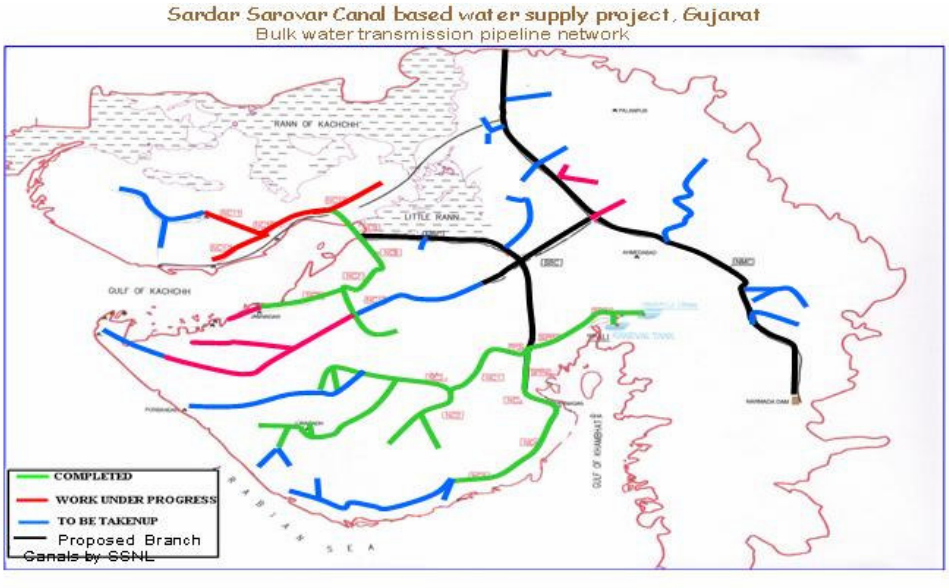
1.74 The canals and sub branches for drinking water supply are already constructed and around 80% of bulk water transmission (by GWIL) is already built.[14] It is estimated that this will be completed by 2007.

1.75 However, only 30% of the last mile connectivity to outskirts of villages and towns has been completed by GWSSB[15]. This connectivity is crucial for reaching water to the ULBs in districts such as Porbandar and Amreli. At this rate, it seems unlikely that water would reach these districts by 2007 (the target year). Exhibit 26 shows the details of projects that have been completed phase-wise and in progress in Saurashtra.

[14] Stakeholder consultations

[15] Stakeholder consultations

Exhibit 26: Sardar Sarovar Canal Project – Bulk Water Transmission Pipeline Network



Source: RWSS study of Gujarat state 2004

1.76 The pipeline network inside each village/town is the responsibility of the respective ULB. The target of 2007 set for water to reach the villages by 2007 cannot be fulfilled if this internal distribution network is either absent or inefficient.

1.77 The present pipeline network in villages and towns cannot sustain the flow of water from Narmada. Further, these pipelines will cause heavy leakages resulting in huge losses to the investments made in the project. Out of 100 towns and cities in Saurashtra, a minimum of 70 towns/cities need upgradation of pipelines (and internal distribution network) for ensuring adequate water supply.[16]

1.78 Further, the storage facilities to be built by these ULBs within each town or village are either insufficient or yet to be planned.

Quality of Narmada water

1.79 Water from Narmada is high in quality and is considered one of the purest forms of water. Further, diseases due to Fluoride and Nitrate in districts like Porbandar or Amreli would be eradicated once Narmada water flows in.

[16] Stakeholder consultations

1.80 The salinity content in Narmada is far less than current levels in water available in the various districts. Thus, high setting and operating costs of de-salinating plants can be avoided if Narmada flows in.

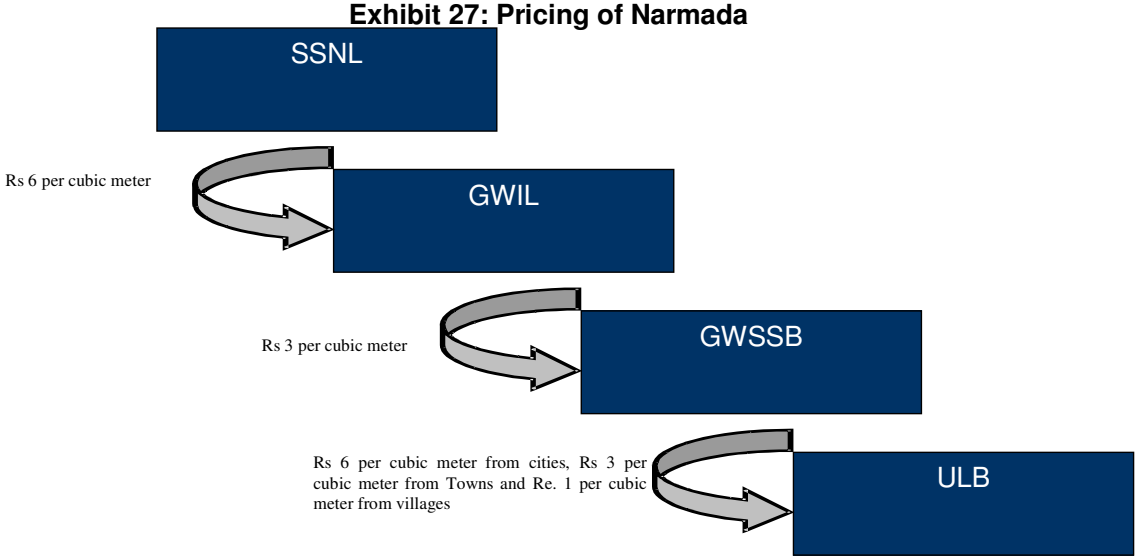
Cost of Narmada water for drinking water supply

1.81 The current price of water from resources like basins and small rivers is estimated to be Rs.14 per capita per year to be paid by ULBs to GWSSB. The estimated recovery from these bodies is pegged at just 2%.

1.82 GWIL and GWSSB are already incurring losses[17] due to the low rate of recovery. Due to high costs of supply, Narmada water is likely to be more expensive than the current rates in the ULBs (where there is already a situation of low recovery). The state government in association with all the three departments will have to formulate a decision regarding the treatment of losses due to under recovery of costs by each of the departments.

1.83 Exhibit 27 gives details of different prices decided by these entities

Exhibit 27: Pricing of Narmada



1.84 These are the expected inter-agency prices which have not yet been finalized. The above pricing arrangement would result in the following issues:

(a) GWIL already incurs costs of Rs 4-6 per cubic meter excluding depreciation and debt service. The cost of financing and depreciation will add up to around Rs. 4 per cubic meter. But GWIL can charge only Rs.3 per cubic meter to GWSSB,

[17] Stakeholder consultations

thereby resulting in a low recovery rate of less than 50%. GWIL therefore incurs huge losses due to low rate of recovery and low pricing.

(b) GWSSB is proposing to charge Rs. 6 per cubic meter to cities and Rs. 3 per cubic meter in towns. It plans to charge just Re. 1 per cubic meter for villages. GWSSB. But GWSSB is expected to incur huge costs in setting up last mile network to villages, towns and cities. As a result, it is also not expected to recover its costs at the said tariff levels.

1.85 Assuming an allocation of 400 MCM annually of Narmada water to Saurashtra and further assuming that the extent of under-recovery would be to the extent of a minimum of Rs. 10/M^3, then **the value of under-recovery would be Rs. 400 crores annually.** Clearly, such subsidies are unsustainable in the long run and necessitate a strategy to reduce these before they are ultimately phased out.

Suggestions based on current scenario

Budgeting for "under-recovery"

1.86 It is evident from Exhibit 27 that one of the most pressing action steps required by the state government is to make appropriate budgetary allocation to cover the cross-subsidy or under recovery. Simultaneously, a timeframe needs to be put in place to phase out "under-recovery". This would be required not only to respect the basic principle of tariffs being reflective of the economic costs of production but also to create an environment in which pricing also leads to conservation an efficient use of a scare resource. Absence of such pricing could result in wastage and inefficient use leading to depletion of scarce resources.

Accelerating network roll-out

1.87 An equally critical step for the state government would be to accelerate the network roll-out of the last-mile connectivity by GWSSB (which as per stakeholder feedback is only 30% compete). Understandably, funding is a constraint for the slow progress. Adequate budgeting combined with evolving creative structures for Private Sector Participation (PSP) could help significantly tide over this situation. This is briefly explained next.

Structuring Private Participation

1.88 As analyzed above, the huge investment costs combined with associated risks and under recovery may not encouraging private bidders to investment in transmission and distribution networks.

1.89 However, private sector participation can be considered under 2 broad frameworks:

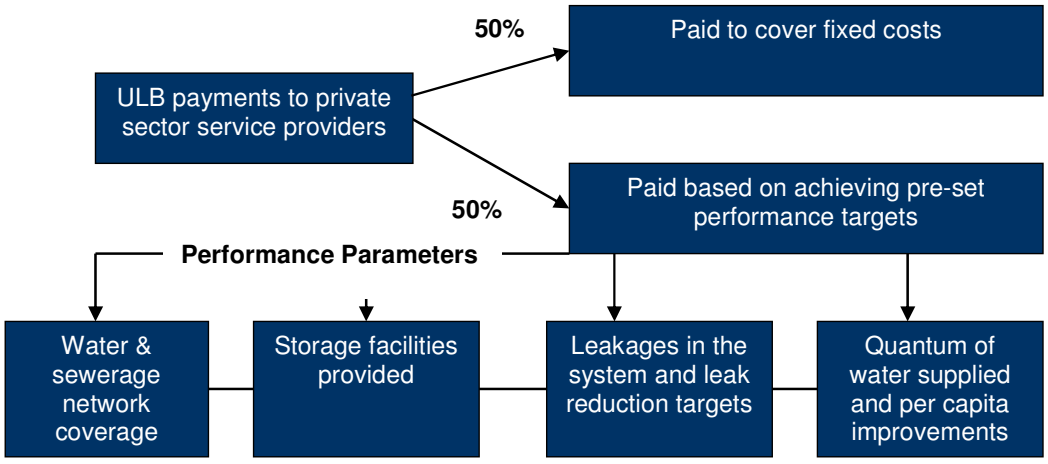
(a) If the government wishes to accelerate as well as transfer the completion risks in setting bulk-transmission or last mile connectivity projects, then these identified projects could be awarded on an "**annuity payments model**" to private

developers. This is because of the sub-economic tariffs as explained earlier and the low recovery levels. The basic criteria for deciding on this model would be the spread between the effective cost of the annuity payments (i.e.. the average cost of funds to the private sector) and the effective borrowing costs (including opportunity costs and hidden costs) to the government if it were to finance these projects with public funds.

(b) The other option would be to involve private sector in water distribution through various forms of "**management contracts**" or "**O&M concessions**". The principal reason for this option would be to adequately prepare the towns, municipalities and ULBs to successfully "receive" water by suitably strengthening their distribution networks because these are currently in a poor condition. In this model, the private sector would be given aggressive performance targets, including reducing unaccounted for water (UFW) and improving certain pre-defined service standards/metrics. The required capital investment could be made either by the ULBs or by the private sector or by both – this would be a situation specific arrangement. The length of such contracts or concessions would be primarily determined by (i) the minimum timeframes required to realize efficiency improvements, including reducing UFW and (ii) the quantum of investments made by the private sector so as to provide a reasonable timeframe to recover these costs. In this model, a two-part payment structure could be made – one linked to fixed costs being incurred by the private sector and the other linked to achieving the pre-set performance targets. In this arrangement, the tariff risk would reside with the ULBs as this would continue to be a sensitive matter. This structure is illustrated below.

(c) Until such time that private investors are given full freedom to set tariffs and recover their costs (an admittedly difficult proposition given the acute pricing distortions illustrated earlier and the low recovery rates), any other form of private participation other the broad options discussed above would be difficult to foresee.

Exhibit 28: PSP in Water distribution



1.90 As shown in Exhibit 28, such private participation could be structured for periods in the range of five years. These could be extended or modified based on the results.

1.91 As a variant of the management contract/O&M concession model, private bidders can also be involved in operation and maintenance of both water supply and sewerage facilities instead of just water supply alone. Again, this would depend of the specific requirements of a given town or ULB.

1.92 For instance, in districts like Amreli where no sewerage system is present, private sector participants could cover both water supply and sewerage.

1.93 In other words, the above structures in a way provide a fixed rate of return to the private sector participants. As explained earlier, unless important reforms such as volumetric billing, resetting tariffs to reflect economic cost of production and providing full freedom to private sector to set tariffs are put in place by the ULBs, it would be difficult for government to transfer these risks. One of the yardsticks for selecting projects for PSP could be the economic rate of return i.e. a social-cost benefit analysis. The social-cost benefit analysis can be based on several factors like:

(a) Increase in health conditions due to better quality of water from Narmada. It is estimated that there can be a saving of Rs. 1728 million spent on healthcare due to use of unsafe water in the region.[18]

(b) Increase in productive time for women due to availability of water at door-step. It is estimated that there will be a saving of 33 million women days & saving of Rs. 1248 million per annum.[19]

(c) Reduction in costs of setting up re-charge facilities and desalination plants etc

1.94 The estimated investment in upgradation of pipelines within Saurashtra is expected to be around 5000 crores[20]. Given this magnitude of investment, PSP in water supply and/or sewerage is necessary for the state government.

Setting up a regulatory Authority

1.95 The state Government is in the process of examining a proposal to set up a State Water Regulatory Authority which will look after the issues relating to water tariffs, regulation and control. The state government is considering resolution of the following very vital issues relating to the operational management of water supply systems in the State. These include

[18] Rapid water assessment study of Gujarat state-2004

[19] Rapid water assessment study of Gujarat state-2004

[20] Primary Estimated costs based on discussions with GWSSB

(a) State Water Policy

(b) Water Pricing Policy

(c) Putting in place a tariff mechanism

Setting up an independent regulator would be a step in the right direction as this could bring greater transparency to the whole issue of under-recovery and cross-subsidy. In the least, the regulator would be able to provide an objective assessment of the extent of under-recovery in water tariffs by different entities in the value chain (SSNL, GWIL, GWSSB and the ULBs). This would then provide the state government with a basis for not only budgeting but also for formulating a plan to phase-out under-recovery.

Accelerate network roll-out for irrigation

1.96 Since irrigation is one of the main sources of income generation in most districts of the region, water supply network has to be created in time for ensuring increasing agriculture production and productivity. In conjunction with Narmada water supply project, the Government of Gujarat has also set up approximately 150,000 check dams and Khet Talawadi's across the State. This could have substantial impact on the future demand of water for household and irrigation purposes.

1.97 Details of water usage for irrigation purposes in Saurashtra are given in Exhibit 29.

Exhibit 29: Water usage in Irrigation

Name of Crop	Water Consumption (MCM)
Cotton	3355
Wheat	767
Alfalfa	383
Groundnut	136
Onion	114
Sugarcane	96
Others (Fodder, Bajra, Castor etc.)	160
Total	**5011**

Source: White Paper on Water in Gujarat, 2000

1.98 The planning for water supply network for irrigation is still in its nascent stage. It is expected that it will take a minimum period of ten years [21]for Narmada water to reach irrigation canals. The farmer groups, co-operative societies etc are yet to be contacted to find the total irrigational water supply required. Given that agriculture is a key area for providing a growth stimulus, the state government should also accord priority to accelerated roll-out of the irrigation network in the Saurashtra region.

Laying strong emphasis on conservation

1.99 Government of Gujarat has created a non-profit organization called Water And Sanitation Management Organization (WASMO) to promote and develop community participation at village level in water conservation. It acts as a facilitator and identifies NGOs to educate communities on uses and conservation of water, and also promote gender based programmes at village level. This education will lay a stepping stone for helping government in achieving its target of ensuring water supply.

Industrial Parks

Overview of activities of GIDC

1.100 GIDC was established in 1962 with the objective of developing industrial parks across the state. It was to help promote industrial development across various regions of the state. Till date, GIDC has developed over 180 industrial estates in the state. The total area allotted in these industrial estates is over 13,000 hectares. Out of 225 talukas within state, only 54 do not have these estates. The vision of GIDC is to provide an estate in each taluka. [22]

[21] Average estimated time of building sub-branch canals, involve farmers for distribution, formation of co-operative societies in India as per discussions with GWSSB

[22] Stakeholders' consultations

1.101 Over the years, the industrial estate development has primarily been in South and Central Gujarat. As shown in Exhibit 30, coastal Saurashtra has only 4.4% of total industrial land developed in Gujarat's industrial estates. Further, only 58% of the total developed land in coastal Saurashtra is allotted to industries. Saurashtra primarily has the presence of engineering, chemical and ceramic industries in the estates.[23]

[23] Industry module of the report provides details of industries present within each district.

Exhibit 30: Overview of GIDC estates in Saurashtra & Gujarat

District	Land Acquired (ha)	Land developed (ha)	Land Allotted (in ha)	Residual "land bank" (ha) (acquired – allotted)	Land Developed as % of Land Acquired	Land Allotted as a % of Land Developed
Jamnagar	391.24	191.80	127.72	263.52	49.0%	66.6%
Porbandar	330.36	255.52	93.76	236.6	77.3%	36.7%
Junagadh	286.51	193.42	108.43	178.08	67.5%	56.1%
Amreli	54.02	6.75	2.59	51.43	12.5%	38.4%
Bhavnagar	345.35	281.80	204.75	140.6	81.6%	72.7%
Coastal Saurashtra	**1,407.48**	**929.29**	**537.25**	**870.23**	**66.0%**	**57.8%**
Rajkot	839.91	715.50	527.14	312.77	85.2%	73.7%
Surendranagar	246.01	234.00	163.89	82.12	95.1%	70.0%
Saurashtra Total	**2,493.40**	**1,878.79**	**1,228.28**	**1265.12**	**75.4%**	**65.4%**
Gujarat	**25,506.77**	**21,144.14**	**13,884.50**	**11622.27**	**82.9%**	**65.7%**
Coastal Saurashtra as % of Gujarat	**5.5%**	**4.4%**	**3.9%**			
Saurashtra as % of Gujarat	**9.8%**	**8.9%**	**8.8%**			

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Current scenario and issues in Industrial Parks in Saurashtra region

1.102 As evident from Exhibit 30, the land allotted as a proportion of land developed is 65.7% for Gujarat while this ratio is 65.4% for Saurashtra region (57.8% for coastal Saurashtra). Upon a closer examination of Exhibit 30, it is hard to relate the above concern of stakeholders with lower occupancy levels because the utilization levels in the districts of Rajkot, Surendranagar and Bhavnagar is in excess of 70%. What can however be inferred from Exhibit 30 is that lower levels of industrial activity and investment (especially in the districts of Porbandar, Amreli and Junagadh) could be a reason for lower occupancy levels. It is possible that this could have been compounded by higher prices for land and water.

Absence of Notified Areas within the region

1.103 For better development of areas for Industrial purpose and to improve administrative ease for industries, the state government has declared certain industrial areas of GIDC and others, as 'Notified Area' under Section 16 of the GID Act, 1962. The norms for an estate to be deemed as a "Notified Area" are as follows:

(a) The area should be compact.

(b) The area should be self-sufficient for maintenance.

(c) There should be working population of 500 people.

1.104 At present, only two areas in Saurashtra region come under the purview of a Notified Area. These are port based clusters formed within the region are **not** GIDC estates. Exhibit 31 shows details of these areas.

Exhibit 31: Industrial estates within Saurashtra that are deemed as Notified Areas

District	Industrial Areas ("Notified Areas")
Jamnagar	GSFC- Sikka
Bhavnagar	Alang- Sociya (Area of Gujarat Maritime Board)

Source: GIDC Website

No defined basis for converting land into GIDC estates

1.105 Factors often taken into consideration for site selection are areas that are not developed and where the availability of large tracts of contiguous land is easy. These are often areas with inadequate connectivity and low economic activity. These are areas where majority of population is below poverty line or other similar backward areas.

1.106 Availability and social obligations seem to be taken into consideration with a view to create employment by industrialization. However, unless these initiatives are backed by appropriate provision of connecting infrastructure and quality & cost effective infrastructure within the zone, the principal objectives behind setting up such estates may not be fully realized. As per discussions with GIDC, approximately 40% of the units located within the industrial estates of GIDC are either sick or facing pressure of closure due to various reasons ranging from market conditions and poor site selection to non-availability of basic infrastructure at affordable rates.[24]

High land prices in GIDC estates

1.107 The general perception of stakeholders is that the price of land within the estate is very high as compared to the price of land outside the GIDC estate. The stakeholders do not seem to be able to relate the higher land price with ready built infrastructure like roads, sub station for power and water supply distribution network. This could be because of dissatisfaction on quality of such services in GIDC industrial estates. Hence, investors seem to be tempted to locate their units outside GIDC estates. Industrial estate development agencies in many states in India including, in developed states such as Maharashtra face this challenge wherein land rates in Industrial estates is higher than those outside the estates. we feel that a focus on quality of services, including focusing on industry specific common infrastructure within estates could mitigate this problem. The recommendations to this effect have been discussed subsequently.

1.108 Also, it is perceived by stakeholders that the criteria for selecting an area for conversion into a GIDC estate are not entirely based on demand from industries. Parameters like continuous water and power supply and efficient disposal facilities are not given due weightage on decision of conversion of land into GIDC estates. As evident from the section on industrial policy comparison across select states, these factors could be denting competitiveness of the Saurashtra region in relation to other states and regions (including within Gujarat).

Inadequate Infrastructure

1.109 During our stakeholder discussions, the issue of inadequate availability of water, unreliable power supply and lack of good connectivity in the Saurashtra industrial estates has been raised repeatedly. The high costs of such crucial factors for setting up and operating units is potentially hampering the industrial investment prospects of the region. [25]

[24] Consultations with GIDC and Industry

[25] Consultations with Gujarat Chamber of Commerce, Ahmedabad

Suggestions on way forward

Converting estates into Notified Areas to improve management

1.110 Based on stakeholder consultation, as a first step, the state government could facilitate the formation of Notified Areas in the GIDC estates in Saurashtra. This would help these estates function with greater autonomy and accountability. This status would provide user industries the platform to overcome their constraints.

1.111 On declaration of an area as 'Notified Area', provision of select sections of Gujarat Municipalities Act, 1963 will be extended for administration. A Notified Area Officer (NAO) will be appointed by the advisory committee[26] to represent the entire area. An area so converted will be deemed to be a local self-government in itself. The advantages of conversion are as follows:

(a) The advisory committee acts as a statutory committee in Notified Areas. This committee decides the tax rate after consultations with all its members.

(b) Further, this tax is levied by NAO and it is its responsibility to collect such tax. The collected tax is used for maintenance and upgradation of that particular Notified Area itself.

(c) The O & M of this estate is the responsibility of members of this area and GIDC is not responsible for any activity.

1.112 At present, a rule book to provide clear guidelines about functioning of this committee is being prepared by GIDC which is under review by the Cabinet

Up gradation of infrastructure facilities in existing industrial parks

1.113 As highlighted in its industrial policy, the state government should operationalize proposed initiatives such as the Industrial Estate Development Fund (IEDF) for strengthening infrastructure in industrial areas and also in GIDC estates. Likewise, the state government should also crystallize the policy for providing incentives for R&D, technology upgradation and marketing & promotion, so that the small to medium scale units that are present in considerable numbers in the GIDC estates get a vital stimulus to perform better in the long run.

[26] Advisory Committee consists of members of estate, at least two representatives of GIDC and any such stakeholders.

1.114 For areas other than GIDC estates (i.e. other industrial areas or isolated areas), the state government should consider formulating a policy to expedite the provision of connecting infrastructure. An example of such a policy is in Andhra Pradesh where the industrial Policy proposes setting up of Industrial Infrastructure Development Fund (IIDF) of Rs. 100 crores. Further, the AP policy states that whenever industries are located in places other than Industrial Areas (i.e. isolated areas), the state government will share the cost of infrastructure up to 25% or Rs.100 Lakhs whichever is less, if such a location is otherwise justified. It also proposes to reserve upto 10% water from existing projects and new projects for industrial purposes including existing industrial units.

1.115 Given that already a large number of industrial parks are developed in various regions of Gujarat and these aren't fully occupied, a first step could be to upgrade the existing parks, especially in regions such as Saurashtra. Against this backdrop, the choice of the estates to be upgraded becomes crucial.

1.116 The estates to be upgraded can be chosen based on the following considerations:

(a) Willingness of industrial estate associations to share the up gradation cost, past records of GIDC based on % of dues recovered

(b) Development of one good industrial park in each district. Some of the industrial estates that could be taken for up gradation within each district are as follows:

Exhibit 32: Industrial estates within Saurashtra Corridor

District	Industrial Area
Surendranagar	Surendranagar
Rajkot	Aji, Lodhika
Porbandar	Porbandar
Junagadh	Junagadh
Bhavnagar	Chitra
Jamnagar	Jamnagar

Source: Stakeholder consultations

1.117 The above-mentioned locations can be taken up first for development within the identified districts. The intention is to make these estates the hub for industrial activity within the district's jurisdiction. Once the development of these estates reaches a plateau, a second location could then be identified for promotion in a similar manner.

1.118 The state government could also consider **O&M concessions** for select identified industrial estates. Both domestic and international developers could be invited for participate in such concessions. The transaction structure could be finalized in consultation with the industry associations and Notified Area Authorities based on the quantum of capital investments required for improvements.

1.119 From our discussions with GIDC, we gather that there are plans to create Cement roads, employee relaxation rooms, in-house training facilities etc within these estates as a part of upgradation process[27]. Upgradation schedule for the estates as per the GIDB Vision 2020 document is shown in Exhibit 33.

Exhibit 33: Upgradation Outlay for Saurashtra under GIDB Vision 2020 (in Rs Crores)

Estate	Outlay	Phase 1	Phase 2	Phase 3
Bhatia	0.11	0.00	0.11	0.00
Dhasa	0.11	0.00	0.11	0.00
Jafarabad	0.12	0.00	0.12	0.00
Dhrol	0.14	0.14	0.00	0.00
Liliya	0.14	0.00	0.14	0.00
Paddhari	0.14	0.00	0.14	0.00
Vallbhipur	0.14	0.00	0.14	0.00
Visavadar	0.14	0.00	0.14	0.00
Sayla	0.18	0.00	0.18	0.00
Chotila	0.20	0.00	0.20	0.00
Morbi	0.29	0.00	0.29	0.00
Jamkhambhalia	0.36	0.00	0.36	0.00
Upleta	0.37	0.00	0.37	0.00
Lakhtar	0.37	0.00	0.37	0.00
Jasdan	0.42	0.00	0.42	0.00
Sihor-I	0.43	0.43	0.00	0.00
Dhranghra	0.48	0.48	0.00	0.00
Jetpur	0.50	0.50	0.00	0.00
Than	0.50	0.00	0.50	0.00
Sihor-II	0.51	0.00	0.51	0.00
Mahuva	0.60	0.00	0.60	0.00
Junagadh-I	0.60	0.00	0.60	0.00

[27] Consultations with GIDC

Estate	Outlay	Phase 1	Phase 2	Phase 3
Damnagar	0.63	0.00	0.63	0.00
Limbdi	0.64	0.00	0.64	0.00
Wankaner	0.69	0.69	0.00	0.00
Palitana	0.78	0.00	0.00	0.78
Babra-II	0.82	0.00	0.82	0.00
Halvad	0.91	0.00	0.91	0.00
Babra-I	0.98	0.00	0.98	0.00
Arambhada-I & II	1.01	0.00	0.00	1.01
Rafaleshwar	1.23	0.00	0.00	1.23
Amreli	1.28	0.00	1.28	0.00
Vertaj	1.47	0.00	0.00	1.47
Bamanbore	1.69	0.00	1.69	0.00
Gondal-II	1.74	1.74	0.00	0.00
Kuwadva	2.24	0.00	0.00	2.24
Junagadh-II	5.00	0.00	0.00	5.00
Jamnagar-II	8.02	0.00	0.00	8.02
Porbandar	8.45	0.00	0.00	8.45
S'nagar	10.05	10.05	0.00	0.00
Chitra	10.38	0.00	0.00	10.38
Lodhika	18.84	0.00	0.00	18.84

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Exhibit 34: Proposed upgradation outlay of GIDC estates in Saurashtra (Rs. crores)

No	Estate	Road	SWD	Water	Drainage	Power	Buildings	CETP	SWD	Other	Total
1	Lodhika	627.75	825.00	344.00	0.00	87.00	0.00	0.00	0.00	0.00	1883.75
2	Kuwadva	53.16	121.00	48.00	0.00	2.00	0.00	0.00	0.00	0.00	224.16
3	Aji	194.07	171.60	0.00	0.00	14.40	0.00	0.00	0.00	0.00	380.07
4	Vertaj	27.82	66.00	48.00	0.00	5.00	0.00	0.00	0.00	0.00	146.82
5	Junagadh-II	168.30	242.00	80.00	0.00	9.60	0.00	0.00	0.00	0.00	499.90
6	Chitra	324.00	484.00	185.00	0.00	45.00	0.00	0.00	0.00	0.00	1038.00
7	Amreli	80.55	47.30	0.00	0.00	0.00	0.00	0.00	0.00	0.00	127.85
8	Lakhtar	6.45	18.70	12.00	0.00	0.00	0.00	0.00	0.00	0.00	37.15
9	Jetpur	7.50	22.00	20.00	0.00	0.00	0.00	0.00	0.00	0.00	49.50
10	Wankaner	2.00	47.30	20.00	0.00	0.00	0.00	0.00	0.00	0.00	69.30
11	Gondal-II	36.35	82.50	40.00	0.00	15.00	0.00	0.00	0.00	0.00	173.85
12	Damnagar	12.40	38.50	12.00	0.00	0.00	0.00	0.00	0.00	0.00	62.90
13	Jamnagar-II	163.51	330.00	288.00	0.00	20.00	0.00	0.00	0.00	0.00	801.51
14	Porbandar	150.47	407.00	280.00	0.00	8.00	0.00	0.00	0.00	0.00	845.47
15	Limbdi	13.52	33.00	16.00	0.00	1.00	0.00	0.00	0.00	0.00	63.52
16	Halvad	45.50	33.00	12.00	0.00	0.50	0.00	0.00	0.00	0.00	91.00
17	Veraval	87.52	115.50	120.00	0.00	3.00	0.00	0.00	0.00	0.00	326.02
18	S'nagar	237.20	418.00	320.00	0.00	30.00	0.00	0.00	0.00	0.00	1005.20
19	Than	13.80	36.30	0.00	0.00	0.00	0.00	0.00	0.00	0.00	50.10

No	Estate	Road	SWD	Water	Drainage	Power	Buildings	CETP	SWD	Other	Total
20	Dhranghra	9.40	26.40	12.00	0.00	0.00	0.00	0.00	0.00	0.00	47.80
21	Chotila	2.80	8.80	8.00	0.00	0.00	0.00	0.00	0.00	0.00	19.60
22	Sayla	2.45	7.70	8.00	0.00	0.00	0.00	0.00	0.00	0.00	18.15
23	Bamanbore	50.50	104.50	14.00	0.00	0.00	0.00	0.00	0.00	0.00	169.00
24	Rafaleshwar	23.82	99.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	122.82
25	Morbi	1.00	27.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	28.50
26	Jamkhambhalia	8.68	27.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	36.18
27	Babra-I	20.80	57.20	20.00	0.00	0.00	0.00	0.00	0.00	0.00	98.00
28	Babra-II	18.00	44.00	20.00	0.00	0.00	0.00	0.00	0.00	0.00	82.00
29	Jasdan	7.50	22.00	12.00	0.00	0.00	0.00	0.00	0.00	0.00	41.50
30	Upleta	6.95	22.00	8.00	0.00	0.00	0.00	0.00	0.00	0.00	36.95
31	Paddhari	1.40	4.40	8.00	0.00	0.00	0.00	0.00	0.00	0.00	13.80
32	Arambhada-I & II	5.60	71.50	24.00	0.00	0.00	0.00	0.00	0.00	0.00	101.10
33	Dhrol	1.40	4.40	8.00	0.00	0.00	0.00	0.00	0.00	0.00	13.80
34	Bhatia	0.70	2.20	8.00	0.00	0.00	0.00	0.00	0.00	0.00	10.90
35	Junagadh-I	14.50	44.00	0.00	0.00	1.50	0.00	0.00	0.00	0.00	60.00
36	Visavadar	1.40	4.40	8.00	0.00	0.00	0.00	0.00	0.00	0.00	13.80
37	Sihor-I	12.40	28.60	0.00	0.00	2.00	0.00	0.00	0.00	0.00	43.00
38	Sihor-II	15.35	35.75	0.00	0.00	0.00	0.00	0.00	0.00	0.00	51.10
39	Mahuva	12.55	47.30	0.00	0.00	0.00	0.00	0.00	0.00	0.00	59.85
40	Palitana	14.30	44.00	20.00	0.00	0.00	0.00	0.00	0.00	0.00	78.30
41	Dhasa	0.70	2.20	8.00	0.00	0.00	0.00	0.00	0.00	0.00	10.90

No	Estate	Road	SWD	Water	Drainage	Power	Buildings	CETP	SWD	Other	Total
42	Liliya	1.40	4.40	8.00	0.00	0.00	0.00	0.00	0.00	0.00	13.80
43	Jafarabad	1.05	3.30	8.00	0.00	0.00	0.00	0.00	0.00	0.00	12.35
44	Vallbhipur	1.40	4.40	8.00	0.00	0.00	0.00	0.00	0.00	0.00	13.80
	TOTAL	**2487.92**	**4286.15**	**2055.00**	**0.00**	**244.00**	**0.00**	**0.00**	**0.00**	**0.00**	**9073.07**

Source: GIDB Vision 2020

Region specific incentives in industrial areas

1.120 Many states offer region-specific incentives as part of the industrial policy. The industrial policy, except for a special package for Kutch, does not propose any region specific incentives. We feel the state government could consider a special package for Saurashtra region, at least for a limited period of 5 years. This would help attract investments into the region especially when there are known inadequacies at present. Once a critical mass of investments take place and a steady state reached (say in 5 years), this policy could be discontinued after which the state government could consider playing a role only in investment facilitation & policy support. Examples of such a package could include exemption from electricity duty for a limited period of 5 years, sales tax exemptions or deferral and capital investment grant (minimum of a fixed amount or a % of capital cost).

Development of new sector specific parks by leveraging specific regional strengths

1.121 The industrial profile of a particular region must be given due importance while creating a new industrial estate within the corridor. Vision 2020 has clearly indicated the reasons for setting specific sector related parks in the region. The Exhibit 35 below gives district-wise details giving rationale for setting up parks within the region.

Exhibit 35: Rationale for Sector Specific Parks in Saurashtra

District/ Sector specific park	Strengths of Corridor	Other Rationale
Rajkot/ Textile and Apparel Park- (Phase-1: 2004-09)	■ Popular existing saree printing cluster ■ Centre of cotton belt – Rajkot (16.6%)[28], Surendranagar (22%)[29] ■ Closer to Mundra & Kandla ports for export purpose	■ Availability of ready infrastructure in the form of closed textile mills that are ideal candidates for up gradation into world-class garments / textile parks ■ Apparels is a non-polluting industry and thus, can be easily located in urban areas ■ A large number of women workers are involved in apparels manufacturing and hence, it would be difficult for them to go to apparel parks that are located far away from urban centres ■ Training being of critical importance for the workers, it is important to establish training institutions. It shall be easier to locate such training institutions in urban areas

[28] Percentage of total production in terms of quantity in Gujarat

[29] Percentage of total production in terms of quantity in Gujarat

District/ Sector specific park	Strengths of Corridor	Other Rationale
Surendranagar/ textile and Apparel park (Phase-2: 2010-14)	■ Centre of cotton belt - Rajkot (16.6%)[30], Surendranagar (22%)[31] ■ Close to Ahmedabad ■ Close to Kutch ports for exports ■ Existing textiles base	■ -Same as above-
Rajkot/ Auto Park (Phase-3: 2015-20)	■ Presence of Diesel engines and other engineering clusters ■ Availability of good skilled labour	■ BMW has evinced interest in setting up a manufacturing base in Gujarat.[32] ■ GM already has significant presence in Gujarat. ■ Strengths of having many engineering clusters in the state.
Bhavnagar/ Chemical Park (Phase-3: 2015-20)	■ Availability of water from Narmada shall make the region amenable for chemical industries ■ Close to the sea and hence, effluent disposal shall be easy	■ The critical factors for location of chemical industries are- existing chemical base in the area and water availability
Rajkot / Gems and Jewellery Park. (Phase-3: 2015-20)	■ Strong base for jewellery manufacturing ■ Presence of an Airport ■ Upcoming Urban centre	■ The principal location criteria shall be the presence of a strong existing base. ■ The place should be able to attract foreign buyers, as majority of the market is export-oriented
Rajkot/ Agro Park (Phase3: 2015-20)	■ High concentration of agricultural production, ■ Groundnut[33] – Junagadh (30.5%) Rajkot (23.5%), Jamnagar (16.3%), Amreli (9.3%), Bhavnagar (6.4%); Castor– Rajkot (8.3%), Jamnagar (4.4%);	■ A critical dimension to make an agro-park successful is the fact that it should be able to have adequate raw material source throughout the year. Since Rajkot is easily accessible to agriculturally rich locations, it is advantageous to set up a park.

[30] Percentage of total production in terms of quantity in Gujarat

[31] Percentage of total production in terms of quantity in Gujarat

[32] Personal Communication with VC & MD, GIDC

[33] Percentage of total production in terms of quantity in Gujarat

[34] Percentage of total production in terms of quantity in Gujarat

[35] Percentage of total production in terms of quantity in Gujarat

District/ Sector specific park	Strengths of Corridor	Other Rationale
	Sesama – Surendranagar (19.4%), Bhavnagar (17%), Rajkot (13.1%), Jamnagar (12.3%), Amreli (8.9%) ■ Mango[34] – Junagadh (20%), Amreli (10%), Bhavnagar (9%); Papaya – Jamnagar (20%), Junagadh (11%); Chiku – Jungadh (20%), Amreli (10%), Bhavnagar (9%) ■ Vegetables[35] – Bhavnagar (12%), Junagadh (9%), Rajkot (8%); Onion – Bhavnagar, Junagadh, Amreli, Rajkot (68%)	

Source: GIDB Vision 2020

Development of new Industrial parks in Saurashtra

1.122 GIDB Vision 2020 has envisaged three new Industrial parks in Saurashtra in the first five years. Understandably industrial parks have the ability to unlock the economic potential. However, developing new industrial parks requires considerable capital investment not just in building in-zone infrastructure but also necessary connecting infrastructure. Our view therefore is that priority should be given to strengthening and upgrading existing industrial area & industrial parks in Saurashtra (where the occupancy levels are approximately 65% as shown in Exhibit 30). New parks or clusters should be developed only if it is critical for the growth of the industries where the region has proven strengths.

Exhibit 36: Proposed I-Parks in Saurashtra as per GIDB Vision 2020

Sector	Location	Proposed period
Textiles	Surendranagar	2005- 2009
Textiles	Rajkot	2005-2009
Textiles	Jetpur[36]	2005- 2009
Agro	Veraval	2010-2014
Agro	Rajkot	2010-2014
Textiles	Surendranagar	2010-2014
Textiles	Jamnagar	2015-2020
Textiles	Jungadh	2015-2020
Apparels	Rajkot	2015-2020

[36] Proposed Hi-tech textile park

Sector	Location	Proposed period
Auto	Rajkot	2015-2020
Chemicals	Jamnagar	2015-2020
Chemicals	Jungadh	2015-2020
Chemicals	Rajkot	2015-2020
Gems& Jewelry	Rajkot	2015-2020
Gems& Jewelry	Bhavnagar	2015-2020
Agro	Surendranagar	2015-2020
Agro	Junagadh	2015-2020
Agro	Jamnagar	2015-2020

1.123 Further, instead of going in for fresh acquisition, existing "land banks" and vacant available land in existing estates could be used for developing new estates or for expansion.

Specialized Infrastructure Requirements

1.124 The key to developing sector specific parks or clusters is the focus on providing specialized common infrastructure to the industry in the estate. This provides an incentive for that industry to invest in this industrial park, as they will enjoy cost savings and access to world-class infrastructure.

1.125 The state government should consider deploying funds from the Industrial Estate Development Fund (IEDF) or any proceeds from the Industrial Infrastructure Upgradation Scheme (IIUS) of the Government of India for strengthening infrastructure in industrial areas, including creating specialized facilities. For sector-specific parks, Exhibit 37 highlights the specialized infrastructure needs that could be created by the state government:

Exhibit 37: Specialized Infrastructure requirements for sector-specific parks

Sector	Specialized Infrastructure
Apparels	Fabric Design Centre facility, Common Mercerizing Centre, Testing and Quality Control facility, Common Solid Waste Management (SWM) Facility
Textiles	Computer Design/ Color Matching Facility, Yarn/textile dyeing facility, CETP Facility, Common SW Treatment Plant, Testing & quality control facility
Gems & Jewellery	Training Centre, Exhibition & Marketing Centre, Strong rooms, Wastewater treatment, Design Centre, Hallmarking Centre
Agro	Modern cold storage & refrigerated transportation facility, quality control test lab, refer-container facilities, waste disposal system, marketing, convention & exhibition centre, R&D centre, Inland ICD stations
Chemical	Power Substation, Chemical Storage Tank, Steam compressed air facility, CETP, Testing and Laboratory Facility, Common Hazardous Waste Treatment Facility,

Sector	Specialized Infrastructure
	Common Disaster Management facility
Auto	CAD/CAM Design Facility, High Precision Machine Tool Facility, Testing & Laboratory Building, CETP, Common SWM Facility

Source: VISION 2020, GIDB

Railways

Assessment of existing railways infrastructure in Gujarat and Saurashtra

1.126 The Gujarat railway network map is shown in Exhibit 38.

Exhibit 38: Gujarat Rail Network

1.127 Apart from having its own arterial network, Gujarat is strategically located on the trunk rail route from South to all the Northern States. As a result, it serves as a gateway to all the landlocked States of North India. Mumbai - Delhi (passing through Gujarat) route also comes under the High Density Corridor of the Indian Railway (IR) network which is one of the most highly utilized networks amongst all the IR networks. The **High Density Network (HDN)**, which connects the four metro cities of Delhi, Kolkata, Chennai & Mumbai and is popularly called as **Golden Quadrilateral** including the Diagonals though comprising only 16% of the network, carries 65% of the freight traffic and 55% of passenger traffic. It is already saturated. Southern Gujarat which has extensive broad gauge network is strategically located along the Mumbai-Delhi corridor.

1.128 Railway lines in Saurashtra region on the other hand are not conducive for freight movement. More than 70% of the track length in Saurashtra region comprises meter gauge. It is pertinent to note that **99% of the goods revenue & 94% of passenger revenue of Indian Railways is earned on the BG system, which in turn accounts for 71% of the total network**. Limited BG links in turn hampers port prospects of the state. This in turn has an impact on the industrial development prospects especially in the Saurashtra region. Hence, in the context of Saurashtra & Gujarat, port and railway development are intricately linked. GMB ports in the Saurashtra coastline can best catalyze development in the region if they are connected to the mainline railway network by broad gauge links.

1.129 Furthermore, roads sector has been providing increased competition to the railways. Various development programmes initiated in the road sector have increased the speed of vehicles on the Indian roads thereby causing a shift from railways to the road sector. Higher haulage trucks as well as improved quality of roads have led to roads becoming more attractive over railways.

1.130 In order to regain its original share of passenger and cargo traffic from other competing modes, the IR has taken several initiatives focusing on expansion of network, increased safety, reducing the manpower and developing new projects through private/joint participation.

1.131 One such initiative is a massive investment plan to eliminate rail capacity bottlenecks on Golden Quadrilateral and Diagonals and to provide strategic rail communication links to ports, construction of mega-bridges for improving communication to the hinterland and development of multi-modal transport corridors. This initiative has been given the name of **National Rail Vikas Yojana (NRVY)**. Programmes under the NRVY are as mentioned:

(a) Strengthening of Golden Quadrilateral and Diagonals connecting the 4 metro cities i.e. Delhi, Mumbai, Chennai and Kolkata.

(b) Providing rail based port-connectivity and development of corridors to hinterland including multi-modal corridors for movement of containers.

(c) Construction of 4 mega bridges at Patna and Munger on river Ganga, at Bogibeel on river Brahmputra and at Nirmali on river Kosi.

1.132 **Rail Vikas Nigam Limited (RVNL)**, a Special Purpose Vehicle has been created to undertake project development, mobilize financial resources and implement projects pertaining to strengthening of Golden Quadrilateral and Port Connectivity.

1.133 The primary mandate for RVNL is time and cost bound implementation of NRVY through largely non-budgetary financial resource using host of funding options including from external multilateral agencies like World Bank, Asian Development Bank, use of private participation model of Build-Own-Transfer (BOT), Joint Venture SPV with equity participation by strategic and financial investors and debt from bankers/FI etc, market borrowing and implementation by RVNL through EPC contracts.

1.134 At present, a total of 56 projects are with RVNL which are proposed to be implemented in a phased manner. **Projects identified within the state of Gujarat include gauge conversion of Gandhidham – Palanpur section, Bharuch – Samni - Dahej section, new line connecting Surat to Hazira.** All the above mentioned projects are part of Port Connectivity projects identified by the Government of India.

1.135 The railway projects identified by Gujarat Infrastructure Development Board are:

(a) **Conversion of Mehsana – Patan rail link** and construction of a new link between Patan – Bhildi *(RFP issued for appointment of consultants for conducting pre-feasibility study)*

(b) **Gauge conversion of Bhildi-Samdari rail link** *(MoU signed between RVNL, GIDB & Gujarat Adani Port Ltd. and project is being included in the scope of work as an additional work for the Kutch Railway Company Ltd.)*

(c) **Gauge conversion of rail link between Ankleshwar and Jhagadia rail link** *(RFP issued for appointment of consultants for conducting pre-feasibility study)*

(d) **Rail Freight Corridor between Mumbai & Delhi** *(RFP issued for appointment of consultants for Preparation of a Report on Assessment of Freight Traffic from Gujarat)*

1.136 As regards rail connectivity within Gujarat and with neighboring states, Saurashtra Coastal Corridor faces problems similar to that in the roads sector. Given its geographical location, the Saurashtra region does not have good connectivity through land transportation routes. Limited BG lines are a major impediment to connectivity. This is further compounded by limited availability of rakes. In our discussions, several manufacturers in the salt and other industries have expressed their dissatisfaction with regard to lack of availability of rakes for transportation of their raw material/finished goods through the railways.

Travelling time from Porbandar to Mumbai is 23 hours with a 1 hour 40 minutes halt at Ahmedabad.

Source: Stakeholder feedback

1.137 Based on discussion with stakeholders in railways, we gather that Ahmedabad is a convergence hub for all trains coming from North India and going down to Mumbai.

Due to creation of multiple zones (with lesser overall track length and geographical jurisdiction) availability of wagons for container transportation has become difficult as zonal authorities are hesitant of sending their wagons to other zones in fear of not getting them back on time.

Stakeholder feedback

From the Porbandar – Delhi and Porbandar - Howrah trains, 4 bogies have been reduced without any reason.

Source: Stakeholder feedback

Okha-Uttaranchal train should be extended till Porbandar

Source: Stakeholder feedback

Start a local train from Porbandar to Bhavnagar via Rajkot - Surendranagar

Source: Stakeholder feedback

Investment of Railways in Gujarat such as Pipavav port connectivity link has not generated enough returns due to gradual traffic build-up at the port. Bhavnagar line conversion has also not resulted in increase in traffic and Bhavnagar Port has been closed down.

Source: Stakeholder feedback

Road and rail linkages are circuitous causing longer journeys to areas like Baroda, Surat and Mumbai. Frequency of trains is also an issue to be looked into. Bhavnagar - Tarapore rail link of 120 km can substantially reduce the train distances to Baroda.

Source: Stakeholder feedback

1.138 As against the above, **an analysis of Vision 2020 Master Plan of Government of Gujarat for the rail sector shows that no cargo has been identified for transportation by railways to/from Porbandar**. Even the port sector master plan doesn't project any increase in cargo throughput from Porbandar Port probably due to draft restrictions and increased emphasis on ports such as Mundra, Kandla and Pipavav.

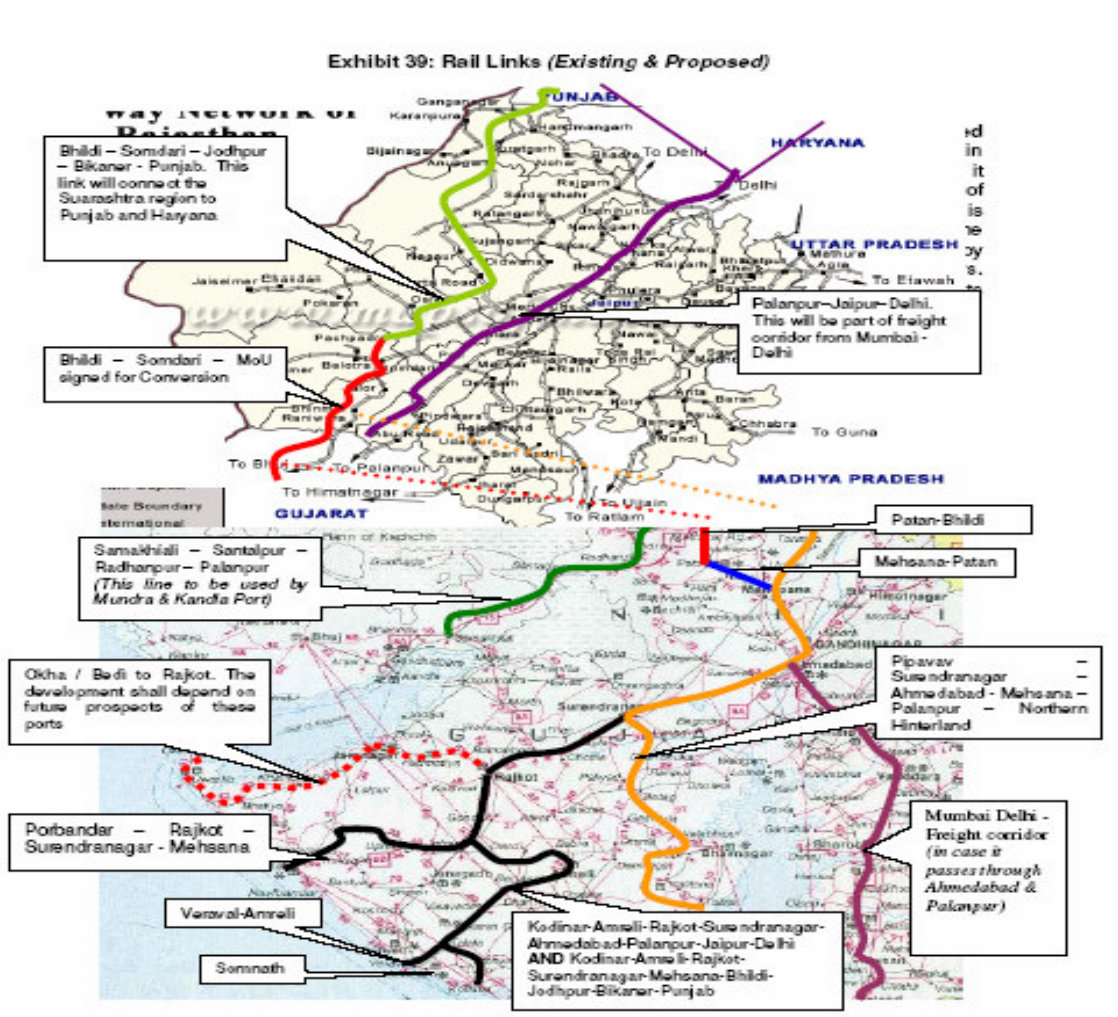
1.139 From the analysis of Gujarat's existing rail connectivity with other States, it is evident that **Palanpur** and **Dahod** are the two exit points from Gujarat leading into Northern and Central States. These locations would continue to be important in the future and they can be developed as railway junctions with sufficient back-up facilities and railway sidings in anticipation of enhancement in cargo to/from other States into Gujarat.

1.140 During the latest rail budget presented during February 2005, two new trains have been proposed in Saurashtra viz. **Rajkot Verawal Fast Passenger Train and Verawal Ahmedabad Express** to improve the connectivity within the Saurashtra Coastal Corridor. Early implementation of these trains should be given priority.

Suggestions for way forward

1.141 We have presented in Exhibit 40 the rail links that exist and the links that we feel should be developed or converted to broad gauge.

Exhibit 39: Rail Links (Existing & Proposed)



1.142 We propose that a **broad gauge rail link may be provided from "Kodinar to Rajkot"** as this link will directly link Kodinar, Rajkot, Surendranagar and Mehsana to North India. This connection could benefit the companies like Gujarat Ambuja Cements Ltd. to transport the goods to Jaipur / Delhi / Haryana / Punjab / Uttar Pradesh and other parts of North India

1.143 Since the Kodinar – Rajkot link will connect Saurashtra to Northern Hinterland, it could also trigger establishment of new industries in the adjoining areas of Kodinar to exploit the available natural resources in this belt.

1.144 Further, **we also propose a connecting rail link from Veraval to Kodinar and onwards to Rajkot**. This link could provide a fillip to tourism in Suarashtra. This is because Veraval is near Somnath and pilgrims could use this link for traveling to Somnath.

1.145 Hence, the combined establishment of the link from "Veraval and Kodinar" to Rajkot could facilitate tourism as well as trade in Saurashtra region.

1.146 Next, **conversion of Mehsana-Patan rail link and construction of Patan-Bhildi rail link should be explored** to strengthen connectivity of key industrial centres in Gujarat with North India. This link shall not only provide an alternate route to carry cargo to Punjab but will also provide savings of 160 Km[37]. A detailed study for this link is in progress. The strategic significance of this link has been presented in **Error! Reference source not found.**.

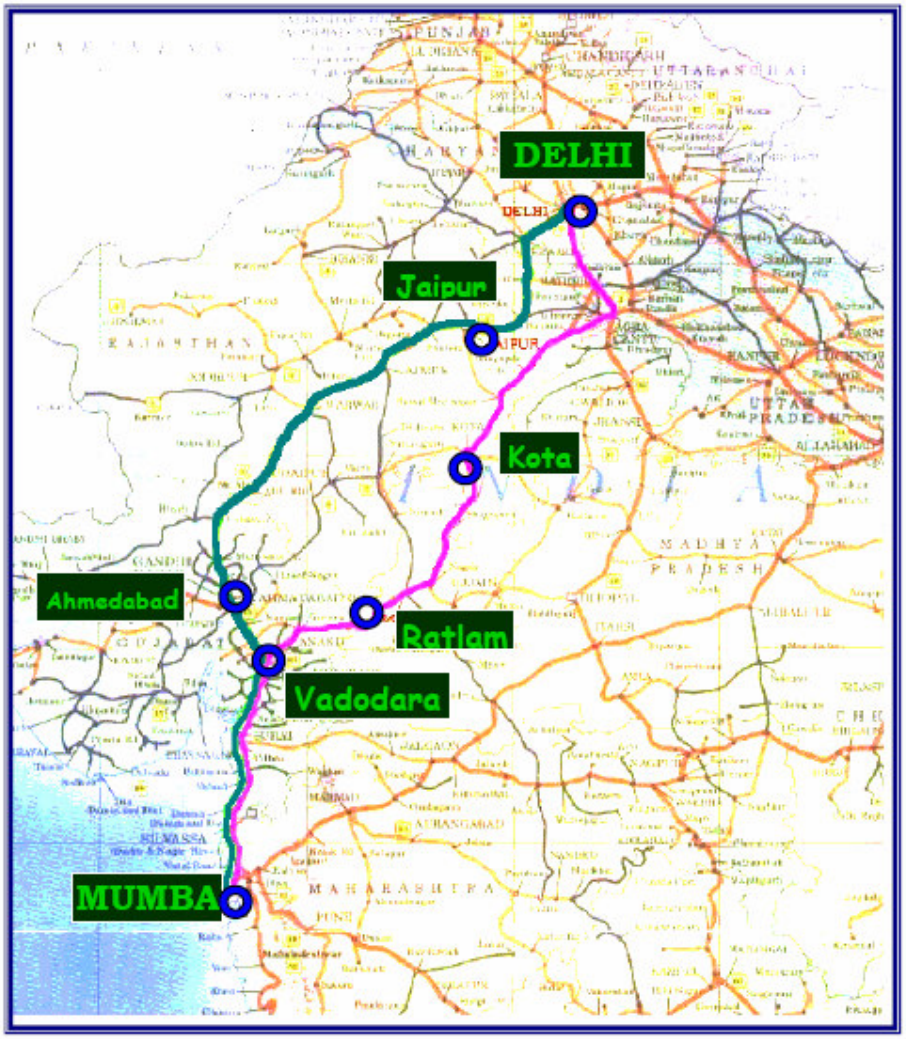
1.147 The proposed Kodinar-Rajkot BG link combined with the broad gauge rail link connecting Mehsana-Patan-Bhildi-Somdari could significantly benefit ports in Saurashtra (e.g.. Pipavav) and industrial units such as Gujarat Ambuja cement near Kodinar. This alignment could provide a vital lifeline to the Veraval-Somnath-Kodinar region by linking it with the mainland BG rail network. Further, this could also benefit passengers commuting between Saurashtra and Rajasthan / Punjab.

1.148 There are also capacity constraints on the Palanpur-Jaipur-Delhi route[38] and if the proposed freight corridor from Mumbai to Delhi *(ref* Exhibit 40*)* passes through Ahmedabad and Palanpur to Delhi, then capacity constraints on the former stretch could be severely compounded. In order to ease the possible congestion, the cargo transported on the Samkhiali-Palanpur-Jaipur–Punjab route could instead be transported on the Samkhiali-Bhildi– Bikaner–Punjab route. For this alternative path, the Mehsana-Patan-Bhildi–Samdari broad gauge link assumes considerable significance.

Exhibit 40: Alternative routes for Mumbai – Dehi freight corridor (proposed)

[37] RFP issued by GIDB for "Selection of consultant to prepare a pre-feasibility report for developing a broad gauge rail link between Mehsana-Patan-Bhildi"

[38] RFP issued by GIDB for "Selection of consultant to prepare a pre-feasibility report for developing a broad gauge rail link between Mehsana-Patan-Bhildi"



1.149 **We propose that a detailed traffic assessment be undertaken for the Porbandar-Rajkot-Surendranagar-North India route and the Poranbandar-Mumbai route.** These studies would help establish the long term prospects for the ports of Okha and Bedi especially in the light of the significant expansions taking place at Mundra and Kandla. This has been further explained in the chapter on ports. Depending on the outcome of these studies, **a rail link could be established either from "Porbandar to Surendranagar" or from "Okha / Bedi" to Rajkot.**

1.150 We consider the Porbandar-Rajkot link as the primary lifeline because it passes through the heart of Western Saurashtra and could be used for passengers as well as cargo. Given its central alignment, connecting links could be established from various areas as and when required.

1.151 Exhibit 41 summarizes the rail links that could be established to benefit the Saurashtra region:

Exhibit 41: Rail links to be established in Saurashtra

Connecting Destinations	Recommendations
Mehsana – Patan	Conversion to Broad Gauge
Patan – Bhildi	Construction of Broad Gauge
Bhidi – Samdari	Conversion to Broad Gauge
Kodinar – Rajkot	Missing Link. A broad gauge link to be provided for connecting it to North India and boosting the industrial growth near Kodinar to exploit the available natural resources
Veraval – Rajkot	Missiing Link. This will connect Veraval to the "Kodinar – Rajkot" link leading to possible boost to tourist given the presence of Somnath in the vicinity.
Porbabdar – Rajkot	A link to be provided for connecting the western Saurashtra to the North India and to Mumbai *(via Ahmedabad)*
Samkhiali – Palanpur	The cargo destined for Punjab, could be transported from Samkhiali-Jodhpur-Bikaner-Punjab. This could facilitate easing congestion at the Palanpur-Jaipur-Delhi Route
Okha / Bedi – Palanpur	The decision for the same to be taken based upon the feasibility study proposed in the Ports chapter.

Airports

Overview of Indian Aviation Sector

1.152 Airports being nuclei of economic activity assume a significant role in the national economy. While cargo carried by air in India weighs less than 1% of the total cargo exported, it accounts for 35% of the total value of exports. Likewise, 97% of the country's foreign tourists arrive by air and tourism is the nation's second largest foreign exchange earner.

1.153 The Indian civil aviation sector comes under the jurisdiction of the Ministry of Civil Aviation (MoCA), Government of India. The Ministry is responsible for:

(a) Formulation of national policies and programmes

(b) Development and regulation of Civil Aviation

(c) Devising and implementing schemes for the orderly growth and expansion of civil air transport

(d) Also administers implementation of the Aircraft Act, 1934

1.154 The MoCA manages the entire sector with the help of following organizations under its purview:

(a) Directorate General of Civil Aviation

(b) Bureau of Civil Aviation Security

(c) Commission of Railway Safety

(d) Indira Gandhi Rashtriya Uran Akademi

(e) Airports Authority of India (AAI)

1.155 The MoCA administers the Indian aviation sectors with the help of different policies focusing on the following sectors

(a) Domestic air transport

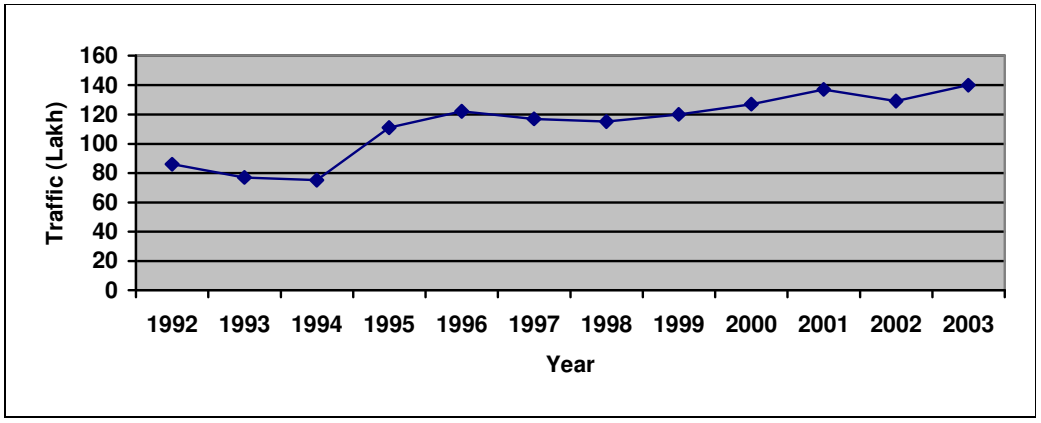
(b) Airport infrastructure

(c) Inclusive Tour Package (ITP) charter flights

(d) International air services

(e) Domestic passenger traffic data for the last 12 years are given in Exhibit 42.

Exhibit 42: Domestic passenger traffic



Source: DGCA

1.156 The domestic passenger traffic has grown at a CAGR of almost 5% over the above period.

1.157 Key operating statistics of all Indian Scheduled carriers from FY 2000-01 to 2002-03 is given in Exhibit 43.

Exhibit 43: Operating Highlights of all Indian carriers

Particulars	2002-03	2001-02	2000-01
Fleet size	138	132	118
No. of scheduled Aircraft departures/day	646	582	525
- Domestic	*557*	*503*	*455*
- International	*89*	*79*	*70*
Growth in Passenger traffic (over prev .yr)	9.7%	-5.6%	7.8%
Avg. passenger load factor (%)	64.8	62.2	68.6
Cargo carried/day (Tonne)	776	695	654
Growth in cargo traffic (over prev .yr)	11.4%	-3.7%	10.6%

Source: DGCA

1.158 Fleet size of the Indian carriers in 1993 was 78 aircrafts whereas in 2003 it has increased to 138 aircrafts. Most of the increase in the last 10 years has been through the private sector (Jet Airways & Sahara) while there has been a decline in the fleet size of Indian Airlines. The above fleet size in inclusive of Air India's aircrafts. During the period under consideration, out of the fleet expansion of 20 aircrafts, 11 have been added by Jet Airways, 5 by Sahara, 3 by Air India and 1 by Indian Airlines.

1.159 There are 449 airports/airstrips in the country. Among these, the AAI owns and manages 100 airports and 26 civil enclaves at defence airfields and provides air traffic services over the entire Indian airspace and adjoining oceanic areas. Presently all the airports in India are classified in the following 5 categories:

(a) International Airports – Mumbai, Delhi, Chennai, Kolkata

(b) Custom Airports - having customs and immigration facilities for limited international operations. For e.g. Bangalore, Hyderabad etc

(c) Model Airports: These are domestic airports which have minimum runway length of 7500 feet and adequate terminal capacity to handle Airbus 320 type of aircraft. These can cater to limited international traffic, if required. These include Lucknow, Bhubaneshwar, Guwahati, Nagpur, Vadodara, Coimbatore, Imphal and Indore.

(d) Other Domestic Airports: All other airports are covered in this category.

(e) Civil Enclaves in Defence Airport: There are 28 civil enclaves in Defence airfields.

1.160 However with rapid development of this sector, the ministry proposes to re-classify the Indian airports into the following categories:

(a) International hubs

(b) Regional hubs

(c) Other operational airports

1.161 As per the projections of MoCA, the domestic traffic would increase to 523 lakh passengers and international traffic would be 330 lakh passengers by the year 2017.

1.162 In order to improve the infrastructure at all the Indian airports, the MoCA has chalked out a plan for modernization of 25 non-metro airports. In the first phase Expression of Interest (EoI) for 15 locations were invited by the Airports Authority of India. Out of the above 15, 2 locations have been identified within Gujarat viz. Vadodara and Rajkot. The scheme includes development of city side infrastructure so as to exploit the commercial value of the land within and adjacent to the existing airports.

1.163 The GoI on its part to promote the aviation sector and make it more affordable is increasing competition by allowing level playing field to, domestic private and foreign players operating in the Indian aviation sector. The Ministry has also allowed private players to operate on select international routes which were previously open only for nationalized players. With competition intensifying in the domestic aviation sector, the average fares and new schemes such "Apex Fares" facility are making air travel more and more affordable to the common man. Introduction of low cost airline is further adding newer customer segments in this sector.

Current scenario and Issues faced at the airports within the region

1.164 As per the Aviation Master Plan of Government of Gujarat, airports in Saurashtra viz. Jamnagar, Porbandar and Bhavnagar have been identified as low growth areas.[39] However, Rajkot which has the potential to become an important economic hub in this region in the long-term has been included for upgradation of its airport facilities.[40]

1.165 However, the face of aviation sector has changed rapidly in last two years and is still evolving. Thus there is a need to look at airport sector in Saurashtra with a fresh perspective. There is a tremendous scope for increase in inter-state air traffic in Saurashtra. Some of the key drivers that could lead to large increase in be

(a) Rapid fall in air travel costs is now enabling larger of population comprising of business travelers, tourists and common persons to use aircraft as a means of transport. Thus provision of economical and reliable services in Saurashtra could give a flip to number of persons traveling by air.

(b) Economic development in Saurashtra has lagged behind rest of Gujarat for a number of reasons. Some of these are poor industrial performance, low agricultural yields, shortage of water and power, poor accessibility to many regions, etc. Various initiatives have been taken by the Gujarat government that is trying to address these problems. Narmada waters are expected to address the water shortage problem and lead to strong revival of agriculture as well as water-intensive industries such as chemical industry in the region. Similarly the

[39] Aviation Master Plan provides traffic growth rate up to 2015 at less than 3% for most areas within Saurashtra

[40] Aviation Master Plan provides traffic growth rate at 6% and impact of development of chemical clusters and textile industries within the region.

government plans to address energy shortage though greater provision of gas based power in the region will further give flip to industry.

(c) Well known tourism spots in Saurashtra such as Dwarka, Porbandar, Gir forests, etc attract a large number of tourists every year; even though accessibility is a problem. Direct air link of the region with large cities in the country would driver greater number of tourists in the region

(d) Increase in household incomes in India has been a key driver for increase in air traffic. And hence moving forward we can expect greater demand for air connectivity with rest of the country from the region.

1.166 Looking at the growth drivers mentioned above, development of at least one of the three airports in Gujarat (Jamnagar, Porbandar and Bhavnagar) would be required. As per initial estimates, Bhavnagar is relatively more industrially active district in the Saurashtra Coastal Corridor and providing adequate air connectivity to Bhavnagar would go a long way in boosting the investment climate.

1.167 It is important to note that airports' ownership and management is a Central subject, and the State should try and impress upon the Centre as well as its various arms overlooking the sector, about the benefits of airport upgradation in Saurashtra on the entire economy of the State especially in light of the fact that this is an economically backward region. This would ultimately result in improvement in livelihoods of the local populace.

1.168 In terms of existing infrastructure, Gujarat has one international airport at Ahmedabad and domestic airports at Rajkot, Bhavnagar, Porbandar, Jamnagar, Vadodara, Bhuj, Kandla, Palanpur, Keshod, Surat and Ankleshwar. Out of the above locations only 8 locations are operational while Palanpur, Keshod, Surat & Ankleshwar are not serviced by scheduled aircraft transporters. Kandla airport too has not had any service since 2000.

1.169 Details of services by various scheduled operators to airports within the Saurashtra Corridor are given in Exhibit 44

Exhibit 44: Air Connectivity in Saurashtra Corridor

Locations	Jet Airways	Indian Airlines
Porbandar	6 days a week	NIL
Jamnagar	NIL	Daily
Bhavnagar	Daily	4 days a week
Rajkot	Daily	Daily

Source: Jet Airways & Indian Airlines travel booklets

Jamnagar airport was originally used for defense operations but has also started civil flights and private flights of Reliance and Essar Group. The airport can

accommodate 4-5 more flights daily with minor expansion of the building and baggage handling facilities.

Stakeholder feedback

1.170 The air traffic per day scenario in the districts within the region is shown in Exhibit 45. Despite having reasonably good traffic and capacities, long delays are discouraging passengers to travel to these destinations via air.

Exhibit 45: Air Traffic per day in Saurashtra Corridor

Locations	Number of passengers per day (average of arrival and departure passengers)
Porbandar	30
Jamnagar	150
Bhavnagar	100
Rajkot	125

Source: Airport Authoritiy of India Website

There are regular delays on flights for Jamnagar/Bhavnagar and most of the times flights to Jamnagar are combined with other regional locations, resulting in long delays.

Source: Stakeholders' consultations

Infrastructural issues at airports within Saurashtra

1.171 There is no ground lighting available in Porbandar. Also the trolleys and parking facilities are inadequate.[41]

1.172 Jamnagar airport is nearly 10 Kms[42] from the city and there is absence of facilities like Taxis within the area.[43] Also, there are no public lighting facilities outside airport premises.

1.173 Distance from Bhavnagar city to airport is about 9 Kms[44] and public transport facilities are inadequate to support air traffic.

1.174 The terminal building in Rajkot needs expansion and renovation and there is no fire station facility in the airport. Stakeholders' consultations provide information that there are inadequate car-parking facilities near the airport.

[41] Stakeholders' Consultations

[42] Airports Authority of India Website

[43] Stakeholders' Consultations

[44] Airports Authority of India Website

Fare from Porbandar to Mumbai is Rs.5425/- whereas fare from Rajkot to Mumbai is Rs.3880/- especially when the distance in nautical miles is same. This high airfare acts as a deterrent for most travelers especially in the light of uncertain timings of the service.
In view of the above, the only option left for travelers is to travel to Rajkot by road and then fly to Mumbai from Rajkot where the regularity of service is perceived to be better.

Source: Stakeholders' consultations

Current analysis on cold storage facilities available at the airports

1.175 Though Amreli and Junagadh contribute a large percentage of exports of Groundnut, Onion and Mango in India, there are no cold storage facilities or reefers available at Bhavnagar or Porbandar airports. Hence these goods are transported to Ahmedabad or Mumbai through road.[45]

1.176 Porbandar and Veraval (close proximity to Porbandar) have maximum fish production in the state. The raw fish and processed marine products are also transported by road to international airports because of absence of cold freezers at the airport.[46]

Suggestions based on current scenario

Porbandar Airport: Airport development can act as a catalyst to Tourism industry

1.177 Tourism can be an important trigger in kick-starting the development process of this region and Porbandar can serve as a hub in providing smooth and fast air connectivity with the outside world. Porbandar can be a potential base for tourists visiting Dwaraka, Somnath and any coastal tourism packages proposed to be developed on the circuit. Secondly, Porbandar can also provide access to tourists interested in Sasan Gir and Mount Gir areas in nearby Junagadh

1.178 The CAGR of air- passengers in Porbandar is approximately 9.9%. This clearly indicates the need for development of the airport in terms of basic amenities like better lighting, sanitation and parking facilities.[47]

[45] Stakeholders' consultations

[46] Stakeholders' consultations

[47] Report on Aviation Master Plan for Gujarat State-2004

Bhavnagar Airport: Stimulate passenger traffic

1.179 The origin of international traffic embarking in Gujarat is mostly from Bhavnagar (around 25% per annum). Passengers travel to international airports (like Ahmedabad and Mumbai) through Bhavnagar airport.[48] Hence, the issues raised on late or irregular flight schedules[49] should be immediately addressed to sustain and augment air traffic.

1.180 Business traffic constitutes a major chunk of traffic moving in and out of Bhavnagar. Around 80% of the business traffic at Bhavnagar ultimately moves in and out of Mumbai. Also, cargo traffic in Bhavnagar is increasing at a CAGR of around 20%[50].

1.181 Bulk of the over seven lakh people employed in the multi-million dollar diamond cutting and polishing industry of Surat are from Saurashtra, also known as Kathiawar and a majority of these diamond cutters and polishers are from the Bhavnagar and Amreli districts. With no direct train connection between Surat and Bhavnagar, private luxury buses and the bus service of the Gujarat State Road Transport Corporation (GSRTC) are the only two available alternatives for ferrying such a large migrant population.[51]

1.182 Exhibit 46 indicates that the air fare will be most economical and the fastest mode for passengers moving between Surat and Bhavnagar. Low cost airlines can be invited for developing a link between Surat and Bhavnagar or have Bhavnagar as a hopping destination between Surat and Mumbai.

Exhibit 46: Cost of aerial travel versus alternative surface mode travel cost

Location	Aerial distance (Km)	Likely ticket cost - 18 seater (Rs.)	Likely ticket cost- 40 seater (Rs.)	Likely cost for AC Car (Rs.)	Likely cost in a 1st AC-Rail (Rs.)	Likely cost 2nd AC(Rs)	Likely cost 3rd AC (Rs)
Surat-Bhavnagar	99	1366	922	1873	1600	969	625

Source: Stakeholders consultations, Aviation Master Plan for Gujarat State-2004, Indian Railways

[48] Report on Aviation Master Plan for Gujarat State-2004

[49] Stakeholders' consultations

[50] Report on Aviation Master Plan for Gujarat State-2004

[51] Business Standard- January 03

1.183 The above analysis seems to suggest that Bhavnagar as a hopping destination between Surat and Mumbai can be considered seriously, especially by low cost airlines. Alternatively, 40 seater aircrafts seem to be cost effective in relation to other competing modes of transport. Judging by this analysis, it would be worthwhile for the state government to initiate serious discussions with low cost airlines to put on the air map more airports in Gujarat.

1.184 The state government could also play a role in providing adequate last mile connectivity while MoCA would b responsible for expansion of runway facilities and providing infrastructure for cargo handling facilities.

New aviation policy[52] can attract traffic at Rajkot

1.185 Ministry for Civil Aviation has plans to provide incentives[53] to aircraft carriers to de-congest airports at Delhi and Mumbai.

1.186 A radically new policy is necessary to meets the demands of a rapidly developing aviation sector in the country. With around 500 planes taking off and landing everyday in Mumbai (450 in Delhi) and 20-25% increase in air traffic per annum in recent years, the most pressing requirement at present is to handle this explosive growth besides providing adequate airport infrastructure.

1.187 The policy clearly states certain incentives will be provided which will benefit carriers that will consider flying in and out of secondary airports rather than use these cities every time. The policy also states that if adequate infrastructure is available at non-metro and smaller airports then, airlines can use these airports as their base. Air-Sahara has already confirmed its plans to make Hyderabad airport as its main base.

1.188 Rajkot has an average traffic of 125 passengers per day and has passenger traffic CAGR of around 8.3%.Also, cargo traffic is intended to grow by 100% by 2015.[54] Hence, Rajkot can be a potential destination for air links that go to states like Rajasthan because of the strategic location of Rajkot between the two states.

1.189 New airlines that have confirmed to start their airlines within the next few months are as given in Exhibit 47. One or more of these **airlines could be invited to start their main base in Rajkot airport.**

[52] Times of India and Business Standard- July 25, 2005

[53] Exact incentives yet to be announced

[54] Report on Aviation Master Plan for Gujarat State-2004

Exhibit 47: New airlines in India

Name of air line	Operational Status
Go Air	To be launched in 2005 year end
AirOne	To be launched in 2005 year end
Magicair	To be launched in 2005 year end
East-West Airlines	To be launched in 2005 year end
Interglobe	Yet to be announced
Crystal Air	Yet to be announced
Paramount Air	Yet to be announced
Visa Air	Yet to be announced
Air-India express (International)	Launched in April 2005
Spice jet	Launched in April 2005
Kingfisher	Launched in May 2005

Source: Business World, 27th June 2005

1.190 Development of Rajkot as a main base will be possible only if phase-wise development of infrastructure at the airport is ensured. Exhibit 48 shows the suggested improvements in infrastructure at Rajkot airport at an approximate cost of 47 crores.[55]

Exhibit 48: Phase-wise development of Rajkot Airport

2005	2010	2015
■ Extension of Runway ■ Runway and safety area works ■ Refurbishment of terminal building ■ Car park capacity enhancement	■ New fire Station ■ Augmentation of power supply ■ New terminal building	■ Expansion of terminal building to 9000 Square meters

Source: GIDB Vision 2020

[55] Aviation Master Plan

Power

Overview of the power sector in Gujarat

1.191 The Electricity Act 2003 was notified on 10th June, 2003 by the Government of India. The salient features of the Act are:

(a) Consolidation of laws related to generation, transmission, distribution and trading of electricity.

(b) Development of electricity industry and promotion of competition therein.

(c) Protection of consumers interests and supply of electricity to all areas

(d) Rationalization of electricity tariff and transparent policies regarding subsidies

(e) Constitution of Central Electricity Authority, Regulatory Commission and establishment of Appellate Tribunal

1.192 In keeping with reforms in the electricity sector, The Gujarat Electricity Regulatory Commission (GERC) has been functional from the year 2000 and has issued tariff orders in 2000 and 2004.

1.193 The Gujarat Electricity Industry (Reorganization and Regulation) Act, 2003 was enacted in May 2003 by the GoG . The salient features of the Act was to

(a) Re-organization of Gujarat Electricity Board

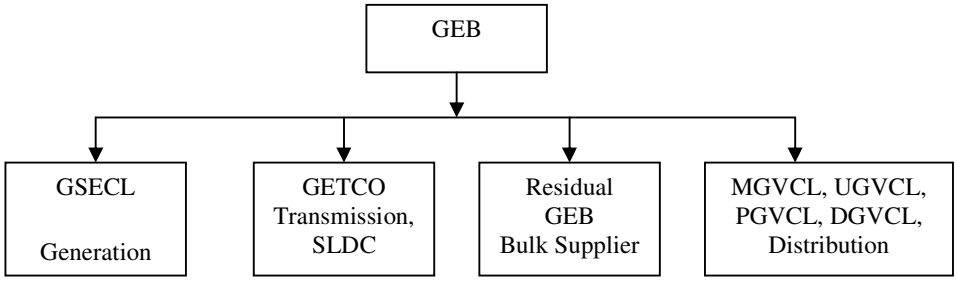
(b) Empowering state regulator to become nodal agency for regulating the industry

(c) Defining the role of state Government

(d) Aligning the tariff towards the cost of supply

1.194 The Gujarat Electricity Board (GEB) has been re-organized in compliance with the Electricity Act 2003 and Gujarat Electricity Industry (Reorganization and Regulation) Act, 2003. In the new industry structure, GEB has been transformed into separate legal entities handling generation, transmission, distribution and trading activities.

Exhibit 49: Re-organized GEB



1.195 Exhibit 50 shows the names of the distribution companies and their constituent circles. The names of the four distribution licensees are:

(a) Madhya Gujarat Vij Company Limited (MGVCL)

(b) Uttar Gujarat Vij Company Limited (UGVCL)

(c) Paschim Gujarat Vij Company Limited (PGVCL)

(d) Dakshin Gujarat Vij Company Limited (DGVCL)

Exhibit 50: Constituent Circles of newly formed distribution companies

MGVCL	UGVCL	PGVCL	DGVCL
Baroda, Anand, Godhra	Sabarmati, Mehsana, Palampur, HimatNagar	Rajkot, Jamnagar, Porbandar, Junagadh, Bhuj, SurendraNagar, Bhavnagar, Amreli	Valsad, Surat, Bharuch

Source: GEB website

1.196 PGVCL is comprises Rajkot, Jamnagar, Porbandar, Junagadh, Bhuj, SurendraNagar, Bhavnagar, Amreli circles which constitutes the **Saurashtra region**.

Current scenario and issues faced by Power Sector in Saurashtra region

Demand supply gap in Gujarat affecting Saurashtra

1.197 At present the state is facing a supply deficit situation where the capacity available is approximately 10% lower than the average demand[56].This demand supply gap is because of the lack of adequate generating capacity available in the state as well as in the country.[57] The overall demand supply gap is also affecting the power situation in Saurashtra.

1.198 The demand - supply gap in Gujarat leads to purchasing of power from other private generating companies and Central Public Sector Units (CPSU's) at higher rate. Exhibit 51 shows the total power generated and purchased from different entities as on 01.04.2004.

[56] Upto June 2005

[57] Projected demand and supply of power in TERI report and GIDB Vision 2020

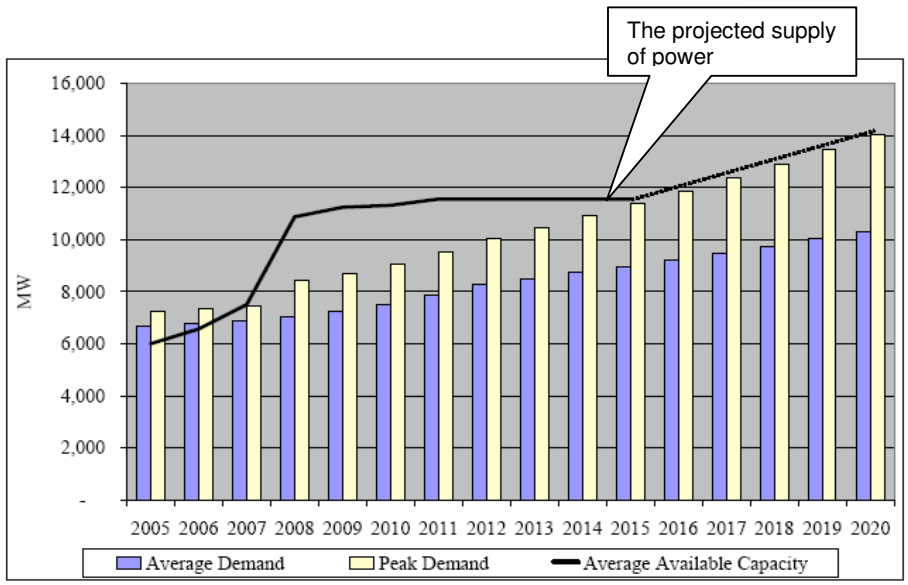
Exhibit 51: Gujarat state power generating capacity

Name of entity	MW
GEB & GSECL (Wholly Owned Co.)	4888
Independent Power Producers (GPEC,ESSAR,GIPCL)	2263
State Share of Central Sector	1532
TOTAL :	**8683**

Demand Supply Situation	2001-02	2002-2003
INSTALLED CAPACITY GEB. (MW)	4513	4333
MAXIMUM DEMAND CATERED. (MW)	7064	7743
MAXIMUM UNRESTRICTED DEMAND. (MW)	8476	9040

The electricity demand in the Gujarat State is on an average of the order of 9000 MW. The maximum demand catered presently is of the order of 7700 MW. The installed generating capacity as on 01-04-2004 is 8683 MW. It is expected that the average demand will be fully met by the end of 2007-08

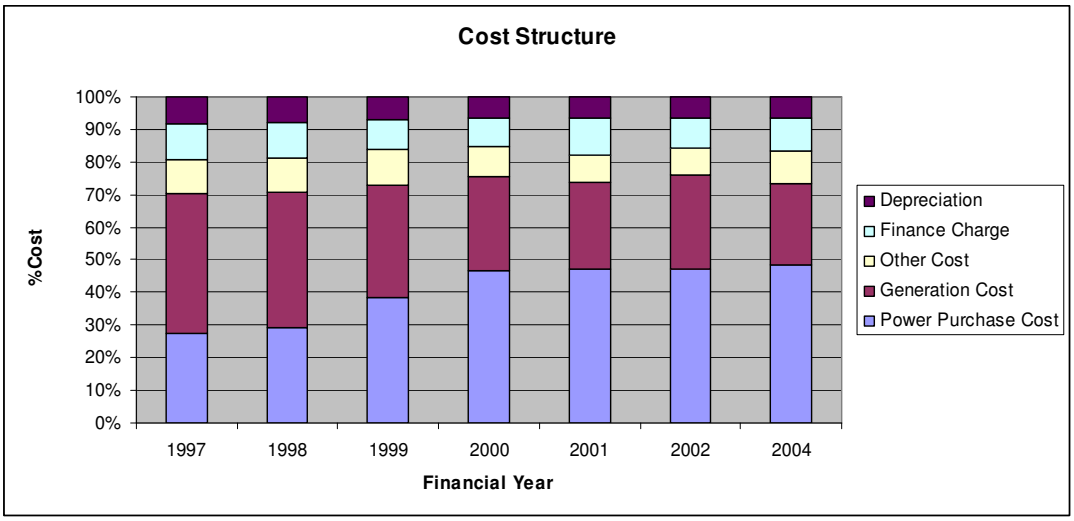
Exhibit 52: Demand and Supply gap in Power sector of Gujarat



Source: GIDB Vision 2020

1.199 The composition of total cost per unit has undergone significant changes in the last six years (Exhibit 53) with substantial increase in power purchase costs. As GEB has contractual arrangement for procurement of power from a number of IPPs operating on natural gas / naphtha, the power purchase costs from these sources have increased. Thus the demand supply gap also resulted in higher cost of supply.

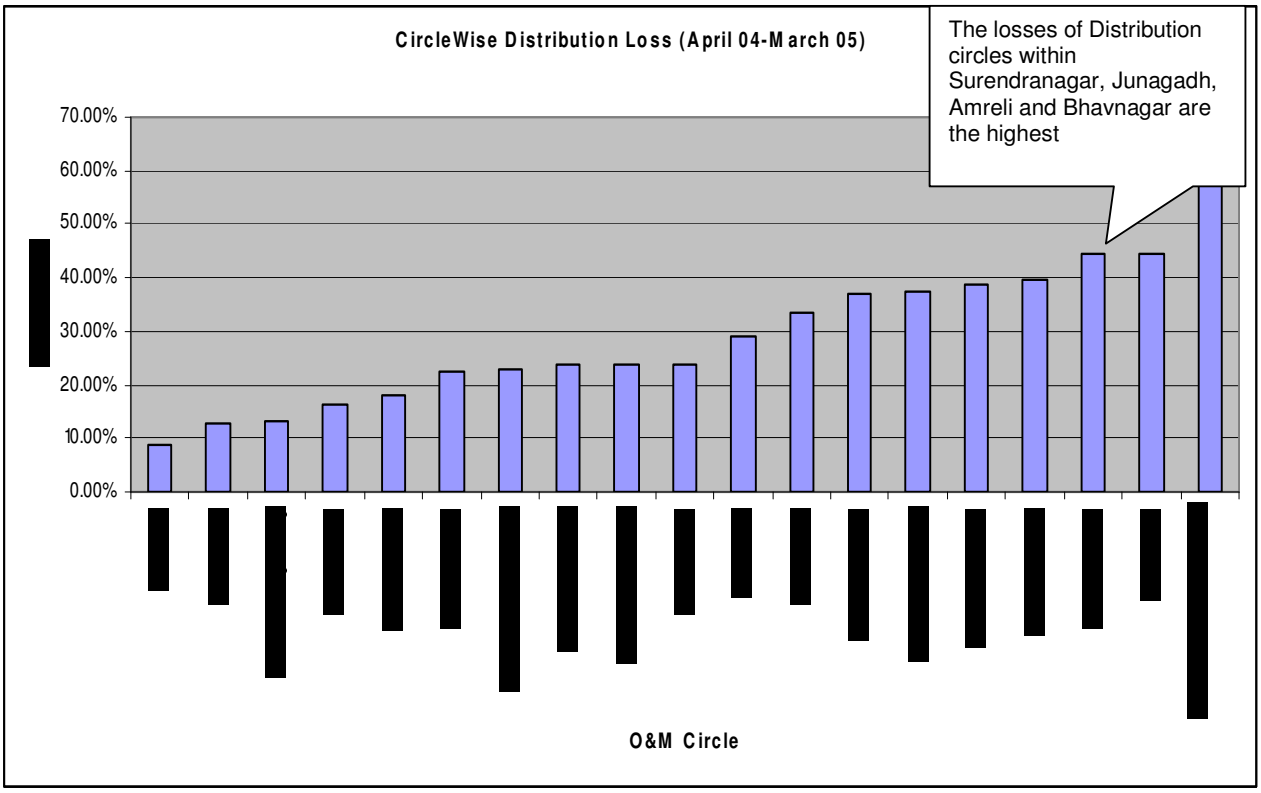
Exhibit 53: Composition of total cost per Unit



Heavy distribution losses

1.200 Exhibit 54 details the circle wise distribution loss of the distribution licensee companies for the year 2004-05.

Exhibit 54: Circle-wise distribution loss



Source: GEB Business Plan report 2004

1.201 Exhibit 54 shows that the distribution circles within Saurashtra region witness maximum losses while the circles in Southern Gujarat have the least distribution loss. When compared zone-wise (where Saurashtra region forms the West zone of Gujarat), the west zone of Gujarat has a distribution loss of about 42% as compared to the South Zone distribution loss of about 13% and Gujarat's average distribution loss of about 26%.

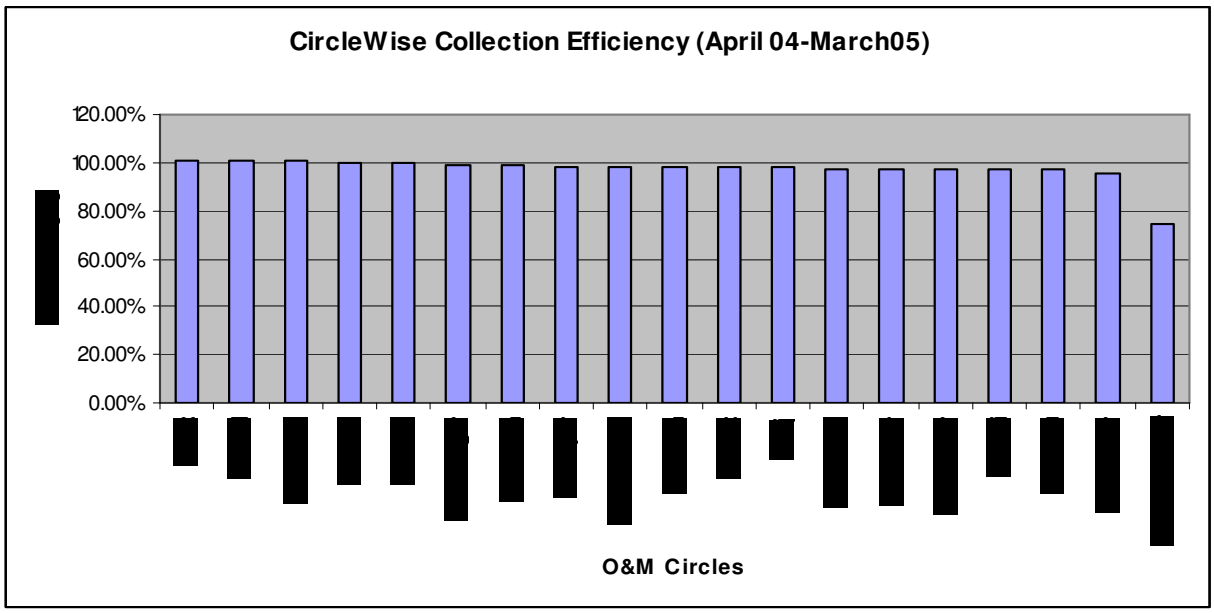
(a) High Transmission and Distribution losses translate into an increase in cost of supply for the distribution company, thereby increasing the tariff to the retail consumers.

(b) It also increases the demand supply gap resulting into higher load shedding

Poor collection efficiency

1.202 The collection efficiency of all the circles in Saurashtra region is provided in Exhibit 55. The collection efficiency of the circles in Saurashtra region is lower compared to the circles in other parts of Gujarat.

Exhibit 55: O & M Circle wise collection efficiency



Source: GEB Business Plan report 2004

1.203 The lower collection efficiency adversely affects financial health of the distribution companies thus limiting the investment capability of the distribution companies in both repairs & maintenance as well as in capacity expansion.

Consumer mix affecting the quality of power supply

1.204 Exhibit 56 shows the consumption mix in Gujarat. Compared to other regions (i.e. DGVCL & MGVCL) in Gujarat, the number of agricultural consumers and agricultural consumption is higher in Saurashtra region (PGVCL).

1.205 There are some inherent disadvantages with agricultural consumption such as

(a) Overloading of feeders – In many cases it is observed that the actual connected load is higher than the declared connected load. Due to unmetered supply it is difficult to detect and prevent this malpractice. This results in overloading of the feeders and increase in technical losses.

(b) Inefficient machinery at the consumer's end - Due to unmetered nature of supply the consumers have no incentive of connecting efficient pumps. This again results in additional technical losses.

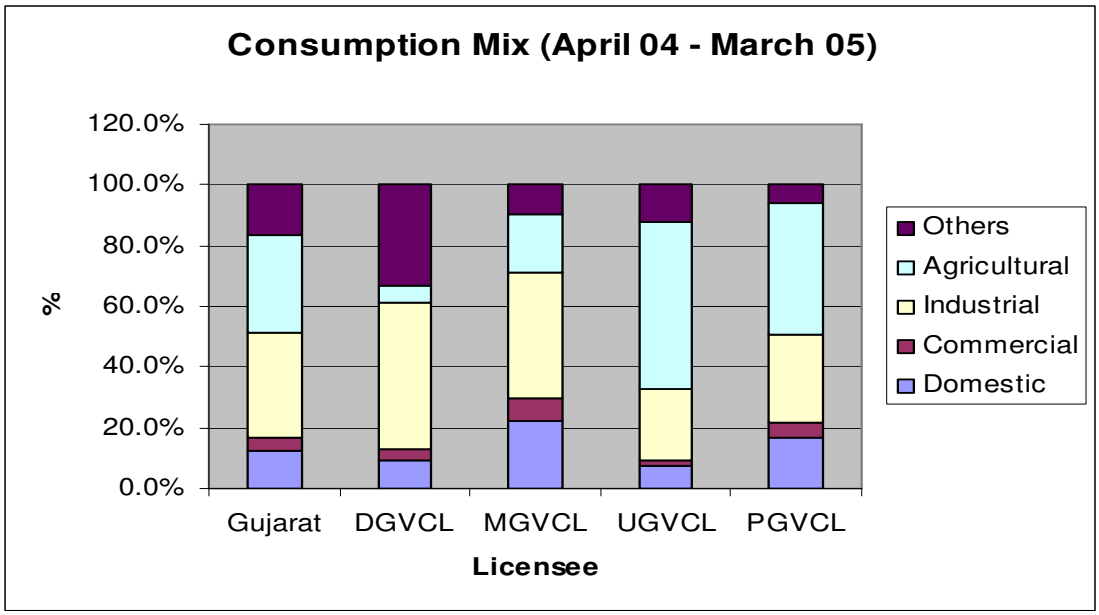
(c) Long stretches of LT lines: In many cases long stretches of LT lines are provided in rural areas. This deteriorates the HT/LT ratio thereby increasing the technical losses and reducing the quality of power supply. Such long stretches of LT lines also provide opportunity of illegal tapping of electricity that increases commercial losses of the utility.

(d) Default in bill payment is also common among agricultural consumer.

(e) Large number of agricultural consumers drawing water from deep tube wells also reduces the ground water level.

All the above factors lead to high technical & commercial losses couples with collection inefficiency.

Exhibit 56: Consumption Mix of Distribution Companies



Source: GEB Business plan report 2004

1.206 Exhibit 57 shows the percentage of metered and un-metered consumer mix in agriculture category.

(a) Un-metered consumers in Saurashtra (PGVCL) are around 87% of the total agricultural consumers. This results into huge technical and commercial losses to PGVCL due to un-recorded supply of power in large quantities.

(b) Since actual consumption cannot be recorded in un-metered connections and there is a tendency to over-consume, it is difficult for PGVCL to plan for distribution network infrastructure of adequate capacity

Exhibit 57: Metered and unmetered agriculture consumers upto March 2005

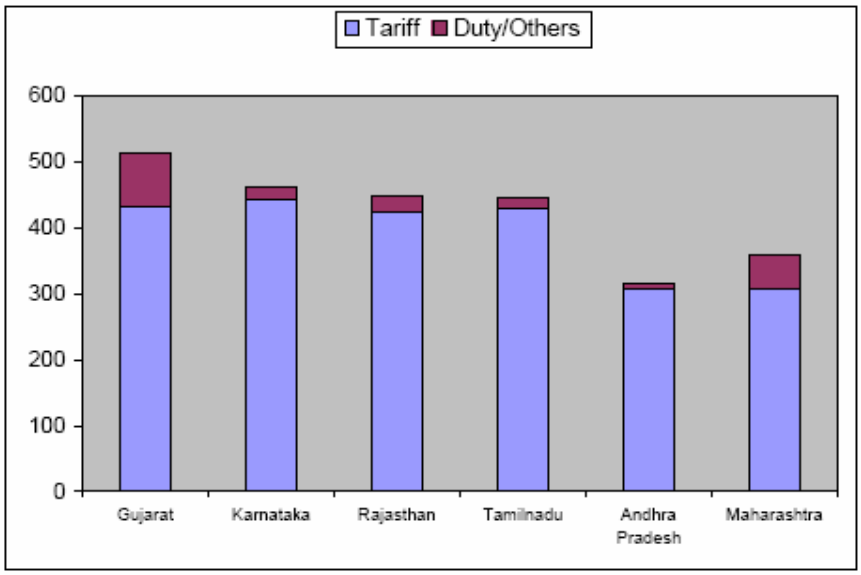
Agricultural consumers	Gujarat	DGVCL	MGVCL	UGVCL	PGVCL
Metered consumers	84666	10890	16310	17981	39484
Un-metered Consumers	481734	49039	28558	158319	245817
% of Metered Consumers	14.9%	18.2%	36.4%	10.2%	13.8%

High Cost of power

1.207 Higher distribution loss, lower collection efficiency, higher agricultural consumption, inadequate distribution network and purchase of power at higher rates leads to high cost of supply in Gujarat. Since these problems are more acute within Saurashtra region, the retail electricity supply rates are likely to be higher in Saurashtra if and when the Electricity Regulatory Commission decides to approve different retail tariffs according to a company's own cost of supply. This may lead to Saurashtra being an unattractive destination for the industrial sector.

1.208 Exhibit 58 shows the industrial duty and tariffs of power in Gujarat as compared to those in other states. Compared to other states the electricity duty is higher in Gujarat which increases the effective cost of power to a consumer. The comparison clearly indicates the immediate need to take corrective actions in respect of the above mentioned issues.

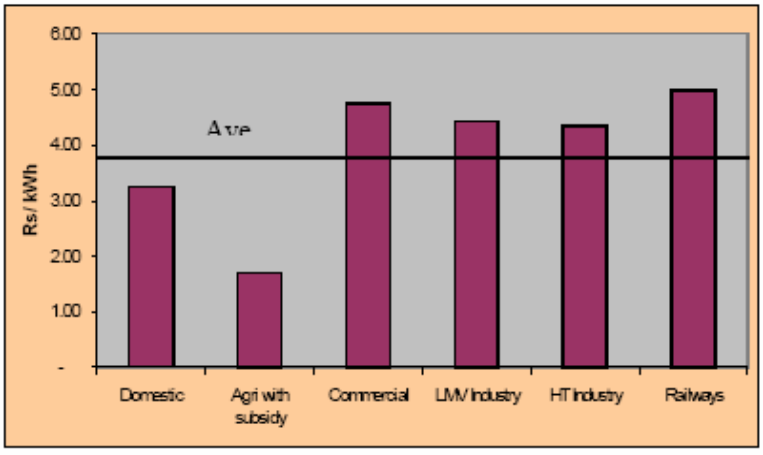
Exhibit 58: Consumption Mix of Distribution Companies -2003-04



Source :GIDB Vision 2020

1.209 The problem is accentuated due to heavy cross subsidies given by Gujarat Government. The tariff to the industrial and other high value consumers is much higher than the cost of supply in order to cross subsidize the agricultural and domestic consumers. Exhibit 59 shows the details tariffs charged for different consumers. It is clear that of tariff is subsidized for agricultural and domestic sector in Gujarat

Exhibit 59: Cost of supply for different consumers- 2003-04



Source :GIDB Vision 2020

Suggestions based on current scenario

Addressing the demand-supply gap

1.210 The single biggest problem that Gujarat faces today is the demand-supply gap. However significant power generating capability addition has already been planned. An immediate action step would be to monitor the implementation of this plan on a monthly basis so that all the hindrances are identified in time and suitable steps are taken to overcome the same.

1.211 In general, establishing fuel linkages is the primary hurdle in capacity addition. The long coastline of Gujarat can be favourably used in developing its long term fuel linkages. The import terminals at Dahej, Hajira and the coal handling facilities at Pipavav, Mundra, Sikka, Navalakhi etc will facilitate in establishing such long term fuel linkages

1.212 Gujarat has an allocated capacity of about 26% of the entire country's gas allocation. Exhibit 60 shows the pipeline infrastructure available for ensuring gas distribution in Gujarat

Exhibit 60: Gas allocation in Gujarat as compared to India

Destination	State Gas Allocation (in mmscmd)	Pipeline Infrastructure (In Km)
■ Gujarat	■ 26.02	■ 1000
■ India	■ 103.75	■ 4600
■ Percentage of total India capacity	■ 25.08	■ 21.74

Source: GIDB Vision 2020

1.213 Some of the initiatives that can be taken to meet demand supply gap are as follows

(a) Combined cycle mega power plant located near the coast line.

(b) Lignite based power plant in Kacch/Surat

(c) Small Power Generation Plants along the Gas Grid

(d) Power Generation Plants by large refineries in the State based on Residual Fuel

(e) Power Generation Plants based on Non-conventional Fuels in rural areas based on Biomass, Bagasse, Wind, Solar etc,

(f) Power generation plants in urban areas based on Municipal Solid Waste

(g) Special attention to wind and tidal energy in the coast line of Saurashtra region.

(h) Captive Generation Plants by Industries or group of industries; it is already a success story in Gujarat with 18.3% of the installed capacity

(i) Installing nuclear power plants in Gujarat (the feasibility of which needs to be assessed).

Note: Detailed cost analysis needs to be carried out before initiating action on the suggestions provided above.

Reduction of distribution losses

1.214 Distribution losses significantly increases the cost of supply of power and thus the tariff. It also reduces the quality of supply. Both of these issues are detrimental to the growth of industry in the region. In order to control this problem, determination of actual losses should be carried out at the outset. The biggest challenge in the process of determination of actual losses is determination of consumption of unmetered supply. Determination of consumption in case of unmetered connections should be carried out on the basis of a sound methodology. Thereafter losses should be reduced through planned and focused efforts.

1.215 Some of the steps that can be taken for reducing losses are as follows:

(a) Reduction of technical losses through –

Adequate investment for strengthening the distribution network.

Optimum HT/LT ratio.

Necessary R&M to enhance quality and reduce interruptions

(b) Increase in Metered Sales –

Metering existing unmetered agriculture supplies, gradually over a period of time

All new connections should be through metering

Replacement of existing meters with high precision electronic meters for high value consumers

Exploring the option of group metering.

(c) Plugging Commercial Losses –

Regularising unauthorised connections

Identification of consumers with lower than expected consumption through appropriate targeting tools, inspection of the installation of such consumers and appropriate corrective actions including replacement of defective meters

Strict and swift action against theft cases in accordance with the provisions of the Electricity Act 2003.

GoG may set up special courts under section 153 of the Electricity Act 2003. GoG may also strengthen the electricity police institution. The additional expenses of the Electricity Police may also be borne by the licensee.

(d) Energy Auditing Measures

Installation of meters on 11 KV feeders and above. Necessary technology for remote meter reading could be utilised.

Installation of meters at all the distribution transformers particularly in the areas with high losses or unmetered consumers.

High Value Consumer Cell

1.216 A separate cell should be set-up with the licensee to provide customized solutions to high value consumers. This will improve the quality of service for the from the consumer point of view while at the same time help the licensee to retain such paying consumers in its fold. The cell shall also keep a close watch on the consumption of high value consumers through the use of appropriate targeting tools and other means. The cell may also develop the capability of the licensee to implement MRI based billing system

Open Access to Consumers

1.217 Open Access to the consumers will bring competition into the sector and will thus incentivise the licensee to perform better.

(a) Regulations, procedures and associated tariff related to open access needs to be in place.

(b) Transparent and friendly procedures for the eligible open access consumers to access the transmission/ distribution licensee network for transmission /wheeling facilities

Captives and Group Captives

1.218 Encouraging captives and group captives will not only increase competition in the sector pressurizing the licensee to perform but will also reduce the demand supply gap through additional capacity in the system:

(a) Clear policies and frameworks related to setting up of captive power plant is required to be in place.

(b) The Gujarat Industrial Development Corporation (GIDC) may act as the coordinating agency for organizing the consumers and installing captive power plants in such areas.

Rural Initiatives

1.219 Management of distribution functions in rural areas through Panchayat institutions, Users associations, co-operative societies, non-governmental organizations or any other village committees should be pursued.

1.220 Encourage off-grid generation particularly from non-conventional energy sources in rural areas.

Other Initiatives

1.221 Monthly review of the progress of implementation of the capacity addition plan should be carried out by the Energy Secretary.

1.222 Implementation of the Standards of Performance under Section 57 of the Electricity Act 2003.

1.223 Establishment of Grievance Forum and the institution of Ombudsman under section 42 of the Electricity Act 2003.

Gas

Overview of Indian Natural Gas Sector

1.224 Natural gas meets around 8% of the primary energy requirements of the country. As per the estimates made by Director General of Hydrocarbons, the total recoverable reserve of natural gas was 628 Million Metric Tonnes of Oil Equivalent (MMTOE). However, the total gas supply in FY 2003-04 met only 63% of the allocation.

1.225 The production of natural gas in India is undertaken by ONGC Ltd. and Oil India Ltd (OIL). Since last few years, few private players have also started exploration and production of natural gas in India. The total gas production in India for the year 2003-04 was 31.9 billion cubic metres (BCM). Exhibit 61 shows the production of natural gas in India for the period 1999-00 to 2003-04.

Exhibit 61: Natural gas production in India

(BCM)

Year	ONGC	OIL	Pvt./JV	Total
1999-00	23.3	1.7	3.5	**28.5**
2000-01	24.0	1.9	3.6	**29.5**
2001-02	24.0	1.6	4.1	**29.7**

Year	ONGC	OIL	Pvt./JV	Total
2002-03	24.2	1.7	5.4	**31.3**
2003-04	23.5	1.8	6.4	**31.9**

Source: MoP&NG

1.226 Over the above period, the production of natural gas in the country has increased at a CARG of 2.9%. Majority of growth was contributed by the private players. The production of natural gas by private players/JVs has increased at a CARG of 16.3% as compared to CARG of 0.3% for PSUs. The share of private players/JVs in the total gas production was around 20% for the year 2003-04.

1.227 Exhibit 62 shows the supply of natural gas in India for the period 1999-00 to 2003-04. Supply of natural gas for the year 2003-04 was 75.84 MMSCMD.

Exhibit 62: Supply of Natural Gas

(MMSCMD)

	2003-04	2002-03	2001-02	2000-01	1999-00
Production	90.5	86.5	80.5	80.8	77.7
Flared	4.4	4.4	4.3	4.4	4.3
Internal usage	10.3	10.2	10.2	10.4	10.0
Supply	75.8	71.9	66.0	66.0	63.4

Source: MoP&NG

1.228 The year 2004-05 witnessed a transition in the domestic gas market when Petronet LNG Ltd.'s (PLL) newly constructed 5 million tonne (MTPA) capacity terminal received its first consignment of Liquefied Natural Gas (LNG) from Rasgas, Qatar in April 2004. The commencement of operations of this terminal will add more than 8 MMSCMD of supply. The old gas fields of Mumbai High and South Basin have started depleting. However, significant discoveries are expected from the blocks awarded under New Exploration Licensing Policy I & II (NELP). Apart from Reliance's gas discovery, other players have also made gas finds across the country, as given below:

(a) Gujarat State Petroleum Corporation – Niko Resources combine in Surat, Gujarat

(b) Niko Resources and Cairns in Cambay Basin; and

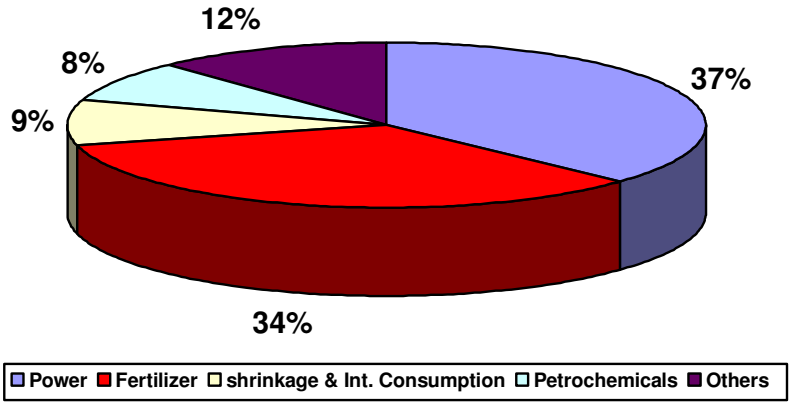
(c) ONGC in Krishna Godavari Basin.

1.229 Production from these discoveries is expected to add approximately 12.5 MMSCMD by 2006-07.

1.230 The demand for natural gas has exceeded supply and GoI has resorted to a system of gas allocations through an inter-ministerial Gas Linkage Committee. The Committee recommends gas allocation based on inter-sectoral priorities. With gradual changeover to market based system and also due to new policy framework mainly on upstream sector and for gas imports, the system of gas allocation is expected to change in future.

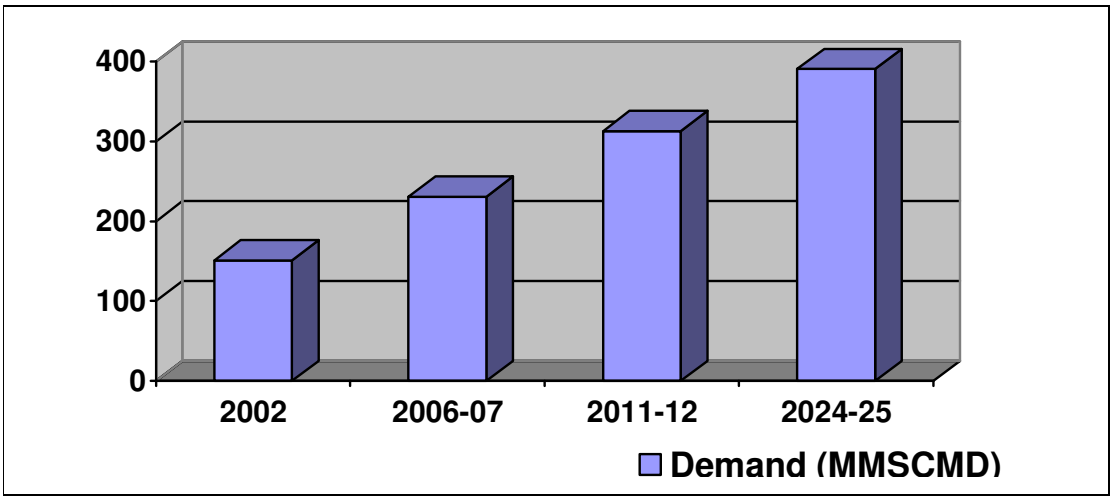
1.231 The share of major consumer sectors in gas consumption is shown in Exhibit 63

Exhibit 63: Share of different sectors in gas consumption



1.232 Currently, the demand for natural gas far outstrips supply, with the demand having grown exponentially in the recent past mainly because of its subsidized pricing and its attractiveness relative to other liquid hydrocarbons like naphtha and fuel oil. Against allocation of 119 MMSCMD, the supply of natural gas for the year 2004 was around 75 MMSCMD, indicating a deficit of around 44 MMSCMD. Exhibit 64 shows the projected demand as per the India Hydrocarbon Vision-2025.

Exhibit 64: Projected natural gas demand



1.233 To reduce the demand-supply imbalance, besides encouragement to enhance domestic production through policy initiatives like NELP, alternative means (import of LNG, gas imports using pipelines from gas rich regions) and sources of natural gas (Coal-Bed Methane (CBM), Natural gas hydrates) are being explored by GoI. This is expected to improve the availability of the natural gas in the country.

1.234 Considering the huge demand and subsequent shortage of supply of natural gas, this sector is one of the most regulated sectors in the country. Natural gas pricing is currently based on a pooling mechanism, with the pooled or consumer price being fixed by GoI. Since 1998, there has been a move to index the consumer price of natural gas to the prices of a basket of fuel oils, with a floor and a cap of Rs.2,150 per TSCM and Rs.2,850 per TSCM, respectively. In addition to natural gas price, consumers have to pay a transportation charge of Rs.1,150 per TSCM along the HBJ pipeline and other taxes (sales tax and royalty charges @10% of producer's price).

1.235 The supply of gas is likely to increase considerably with recent discoveries and various projects to import LNG under implementation. Availability of gas at prices lower/comparable to alternative fuels used by power and fertiliser sectors will decide the demand. Though gas will continue to be a preferred source for the fertiliser sector, coal would continue to compete with gas particularly for thermal stations located close to pithead. Phase of installation of new gas based power projects will play a crucial role in shaping the future demand for gas. Domestic and automotive consumption of gas is expected to increase. It is expected that there would be some independent regulatory mechanism in the near future in the oil sector including marketing of gas.

1.236 The Indian gas market is on the brink of a strong growth. Clarity on regulations would help to improve the risk perception of the sector.

1.237 The power sector and industrial usage will be the key driving forces for gas demand growth in the medium term.

1.238 In the long term, sectors such as city gas distribution, transportation and new uses such as residential and commercial cooling hold significant growth potential. Medium term demand from these sectors, in terms of overall market share, is however, likely to be lower.

1.239 Ministry of Petroleum & Natural Gas has published **Draft Guidelines for Development of Natural Gas Pipelines Network**. Highlights of the draft guidelines are as follows

(a) *Regulation of pipelines* - A Regulator will be appointed for regulating transmission, supply, storage and distribution, systems for natural gas/liquefied natural gas (LNG) and promoting development of the sector.

(b) *Categoriszation of pipelines* – the guidelines categorize the pipelines into low-pressure, local distribution, upstream, captive NG pipelines for specific customer and transmission pipelines.

(c) *Central Gas Authority* - For the development of the gas sector in India, including the establishment of a National Gas Grid as soon as possible, it is essential to develop a comprehensive set of technical standards a7nd safety standards as well as a code for grid connectivity. Adherence to such standards and code could be an integral condition of Authorizations for transmission pipelines. Government will set up a Central Gas Authority who will act as the technical arm of the Government/Regulator. The task of developing the standards and code will be assigned to the CGA.

(d) *National Advisory Council* - To promote and develop the gas sector in the country, including the establishment of National Gas Grid as soon as possible, there shall be a "National Advisory Council". The Council will give advice to the Government, and if so desired, to the Regulator. "The advice of the NAC shall not be binding on the Government/Regulator.

(e) *Allocation of government share of profit gas to GAIL* - It is necessary to take up the linking of all regions of the country through the gas pipeline infrastructure and work towards supplying gas from different sources to all regions to meet present and potential demand. Government propose to develop the availability of gas in different regions by insisting on taking in kind the Government's share of Production Sharing Contracts in the various gas fields and allocating it to GAIL for supply to different regions.

(f) *Grid connectivity* - To ensure grid expansion and grid connectivity, the Government through the Regulator may issue appropriate directions for operations of any pipeline network existing on the date of this policy or for which any Authorization has been granted and the pipeline is yet to become operational.

(g) *Transportation rates* - The transportation rate for the transmission pipelines will be approved by the Government/Regulator. This rate should be considered as a cap to enable lower negotiated rates.

(h) *Long term plan* - With a view to establishing a National Gas Grid as soon as possible, the Government will prepare a ten-year perspective plan for a national gas pipeline network in consultation with State Governments and major industry players. The perspective plan will take into account the gas/LNG available from different sources as well as international movement of Natural Gas/LNG in terms of enhancing the energy security of the country. The

long-term Plan will be kept in view by the Government/Regulator, while approving new gas pipelines.

Assessment of existing infrastructure

1.240 Gujarat is the only State in the country with a fully functional LNG terminal for receiving LNG from various countries. Petronet LNG Ltd. (PLL) has already set up an LNG terminal at **Dahej** while Shell is in the process of setting up another terminal at **Hazira** near Dahej. In view of this, Gujarat also has cross connection of transportation network for supply of gas within and outside the State.

1.241 Being at the center of all action in the country, Gujarat Government has taken various initiatives for the development of this sector. Looking to the potential of this sector, the State Government formulated Gujarat Gas Act, 2001 focusing on regulation of transmission and distribution of gas and laying of pipeline network in the State. However, with the Ministry of Petroleum & Natural Gas (MoP&NG) planning to come out with comprehensive guidelines for regulation (transmission and pricing) of the natural gas sector in the country, issues relating to the role of Centre and State are yet to be crystallized.

1.242 **Gujarat State Petroleum Corporation** (GSPC) is the state level nodal corporation involved in Exploration & Production activities in the gas and petroleum sector. GSPC has also been appointed as nodal point for scrutiny of applications from prospective investors for investment in gas distribution projects. To cater to the huge demand of natural gas, GSPC has been entrusted with the task of creating gas grid infrastructure in the form of a high-pressure pipeline network for transportation of natural gas through its subsidiary company Gujarat State Petronet Ltd (GSPL). This ambitious project of gas grid spanning more than 2200 kms in Gujarat is estimated to cost at Rs.1400 crore, to be implemented by 2010 AD. GSPL has planned a three phased roll-out of its transmission network. Bhavnagar and Jamnagar would be completed in Phase II while Porbandar & Amreli would be completed in Phase III of the overall plan. The basic objective of the project is to cover the entire state with a network of gas pipelines for transmission and distribution of natural gas both for domestic and industrial purposes.

1.243 About 433 Kms of pipeline is already laid and is under operation from Hazira–Baroda–Ahmedabad–Kalol. The network includes the sections of Hazira–Mora (13.8 Km), Amboli–dahej (44.8 Km), Mora–Utran (25 Km), Bhadbhut–Paguthan (25.74 Km), Cairn–Mora (6.4 Km), GNFC, Videocon, Mora–Kribhco spur line (8 Km), Paguthan–Baroda (83.5 Km), Petronet–GACL (8.5 Km), Baroda–Ahmedabad–Kalol (143 Km). Mora–Sajod (58 Km), Kalol–Santej (15 Km). Also the section Anklav-Dhuvaran(30 km) is under construction and Ambapur-Gandhinagar(15.5km) is pending to be commissioned.

1.244 In addition approximately 742 Km stretch is under implementation currently and expected to be completed progressively till July 2006 which includes Mora-Vapi (138 Km.), **Anand-Rajkot-Morbi (294 Km.)**, Kalol-Himmatnagar (63 Km.), Kalol Mehsana (47 Km.) and Spur lines(apprx. 200 km)**.** The current status of the Gas Grid project in Saurashtra is illustrated in the Exhibit 65: Status of Gas Grid Project below:

Exhibit 65: Status of Gas Grid Project

Stretch	Activity			Expected date of completion
	Engineering Study	RoU	Laying of Network	
Anand – Rajkot - Morbi	-	-	✓	July, 2006
Limbi – Pipava	✓	✓	-	Not decided
Rajkot – Vadinar (Jamnagar)	✓	✓	-	Mid 2008
Vadinar - Okha	✓	✓	-	Not decided
Morbi – Mundra	✓	✓	-	Mid 2008
Limdi - Surendranagar	-	-	-	Not decided

(Source:GSPL)

1.245 As indicated above, pipeline on the Anand-Rajkot-Morbi – 294 kms stretch is being laid and is expected to be commissioned by July, 2006. For the Limdi – Pipava line, GSPL has already completed the engineering study. Since the pipleline is primarily aimed at supplying gas to the proposed 400 MW power project at Pipavav, laying of the same would be commenced subsequent to issue of EPC tenders for construction of the power plant. Subsequent to the said date, the pipeline is expected to be laid within a period of 15/16 months. Laying of pipeline on the Rajkot-Vadinar stretch is expected to be completed by Mid 2008.

1.246 In addition to the above transmission network, GSPL would also be laying out domestic distribution network in Saurashtra. It is expected that initially the distribution network will cover the following cities:

- Rajkot
- Morbi
- Vakaner
- Thangadh

1.247 Based on discussions with GSPL, we gather that the demand for gas in Saurashtra in the near future is expected to be in the range of approximately 6-7 MMSCDM. The break-up of the same is as follows:

- Ceramic Industry : 2 MMSCDM
- Pipavav Power Plant : 4 MMSCDM
- Mundra Industrial Zone : 1 MMSCDM

Total : 7 MMSCDM

1.248 An important factor considered while estimating the demand is that Saurashtra industrial zones mainly comprise Cement and Soda Ash Industries which are not gas intensive. Also, major gas intensive industries like Fertilizers or Power are not predominant in Saurashtra. Demand potential for the 400 MW power plant proposed to be set up at Pipavav has been considered. Potential demand from the proposed 4000 MW Ultra Power Plant at Mundra has not been considered since it is going to be a coal based power plant and not gas based.

1.249 **Gujarat Gas Company Ltd** (GGCL) was incorporated in 1988 with the primary objective to procure, distribute and utilize natural gas and allied technology. GGCL has five lines of business viz. gas distribution, transmission, CNG, Gas supplies and natural gas. GGCL has a pipeline network of over 1800 km with major gas distribution projects based out of Surat, Bharuch & Ankleshwar.

1.250 Apart from the various state government entities operating in this sector, private and foreign majors such as Cairn Energy, British Gas, Shell, Niko and Reliance have also entered the gas sector. Most of the on-shore gas fields in Gujarat being operated by ONGC, GSPC, Cairn and Niko are located in North and South Gujarat. While no known blocks/fields are known to exist in the Saurashtra Coastal Corridor.

1.251 **Gas production in Gujarat has decreased from 3166 MCM in 1998-99 to 2216 MCM in 2003-04**. Gujarat has the highest gas allocation of approximately 25% followed by Uttar Pradesh with 19% out of the total available gas in the country.

1.252 The State Government in 2005 announced a cut in Sales tax on gas from a high a 20% to 12%. This was a long pending demand of the industry as Gujarat being a gas hub of the country, had a high rate of sales tax. Considering the benefits of reduction in the rate of sales tax, the State Government then decided to reduce the rate as mentioned above, thus paving the way for un-hindered growth of this sector.

1.253 As per the Vision 2020 master plan of Government of Gujarat for the gas sector, it is found that **districts forming part of the Saurashtra corridor are included in Category B & C based on demand potential (Category A has the highest demand potential)**. The roll out of this plan for Category B & C areas would depend upon the economic development of the region. As seen in the experience of GAIL's layout for HBJ pipeline, in the initial stages of roll-out of pipeline network, it is important to identify and secure large and medium customers in each region. This would ensure minimum economical size essential for sustaining the network and then distribution to domestic and commercial consumers can be targeted. Willingness to pay studies also need to be carried out in the light of state of economic development of the region so as to assess the overall feasibility of the project.

Suggestions for way forward

1.254 Traditionally, the natural gas sector has been in the Central domain and with gas sector gaining importance in view of India's energy security, it will continue to be under the Central domain. Gujarat Gas Act 2001, though a pro-active step to convince the investors of the State's seriousness about the natural gas sector, cannot be fully followed till the time the Central Governments' guidelines provide clarity with regard to role to be played by the Centre and the State Government. Most of the issues identified during the stakeholder consultation process as well as in the data furnished by GIDB refer to issues being addressed in the draft guidelines and hence one needs to wait till the picture on the draft guidelines becomes clearer.

1.255 The State Government should ensure quality and regular supply of natural gas to all customers in the State. The State Government should try and keep a minimum requirement of quantum necessary to provide a regular supply of gas and as a result have enough allocation from the central share of available gas. This will increase the acceptability of natural gas as a viable and attractive alternative.

1.256 Pricing for transportation of natural gas should be done in a transparent manner. Whether the tariff is based on postalised basis or on any other formula, it should be done in a transparent manner so as to ensure a fair deal to all concerned parties.