CRISIL
INFRASTRUCTURE
ADVISORY

Gujarat Infrastructure Development Board (GIDB)

Review of Blueprint for Infrastructure in Gujarat (BIG 2020) – Final Report

Volume 1 – Summary and Vision

August, 2009

Gujarat Infrastructure Development Board (GIDB)

Review of Blueprint for Infrastructure in Gujarat (BIG 2020)

Volume 1B – Summary

August, 2009

Disclaimer

CRISIL Infrastructure Advisory, a Division of CRISIL Risk and Infrastructure Solutions, has taken due care and caution in preparation of this Report. This Report is based on the information obtained by CRISIL Infrastructure Advisory from sources, which it considers reliable. CRISIL Infrastructure Advisory does not guarantee the accuracy, adequacy or completeness of any information contained in this Report and is not responsible for any errors or omissions, or for the results obtained from the use of such information.

Neither CRISIL Infrastructure Advisory nor any director, representative or employee of CRISIL Risk and Infrastructure Solutions Limited accepts any liability for any direct, consequential or perceived loss arising from the use of this Report or its contents. CRISIL Risk and Infrastructure Solutions Limited specifically states that it has no financial liability whatsoever to Gujarat Infrastructure Development Board or any other user/s of this Report.

Contents

List of Exhibits

Abbreviations

AAI	Airports Authority of India
BIG 2020	Blueprint for Infrastructure in Gujarat 2020
BOT	Build-Operate-Transfer
BPO	Business Process Outsourcing
BSUP	Basic Service to the Urban Poor
CAGR	Compounded Annual Growth Rate
CEPT	Centre for Environmental Planning & Technology
CGD	City Gas Distribution
DFC	Dedicated Freight Corridor
DMIC	Delhi-Mumbai Industrial Corridor
E&P	Exploration & Production
EPC	Engineering Procurement and Construction
FRBM	Fiscal Responsibility & Budget Management
GDP	Gross Domestic Product
GFRA	Gujarat Fiscal Responsibility Act
GID Act	Gujarat Industrial Development Act., 1962
GIDB	Gujarat Infrastructure Development Board
GIDC	Gujarat Industrial Development Corporation
GIFT	Gujarat International Finance Tec city
GIFT	Gujarat International Finance tech city
GIFTCL	Gujarat International Finance Tec-City Company Limited
GMB	Gujarat Maritime Board
GoG	Government of Gujarat

GSPC	Gujarat State Petroleum Corporation
GSPL	Gujarat State Petronet Limited
GTPUDA	Gujarat Town Planning and Urban Development Act
GUDCL	Gujarat Urban Development Company Ltd
GUDM	Gujarat Urban Development Mission
GUTP	Gujarat Integrated Township Policy
GUVNL	Gujarat Urja Vikas Nigam Limited
IDC	Industrial Design Centre
IHSDP	Integrated Housing & Slum Development Programme
IL&FS	Infrastructure Leasing & Financial Services
IT	Information Technology
ITES	Information Technology Enabled Services
JNNURM	Jawaharlal Nehru National Urban Renewal Mission
JNPT	Jawaharlal Nehru Port Trust
JV	Joint Venture
KG basin	Krishna Godavari basin
KPO	Knowledge Process Outsourcing
LA	Land Acquisition
LNG	Liquefied Natural Gas
mmscmd	Million Standard Cubic Metre per Day
mmtpa	Million tonnes per annum
mn	million
MoU	Memorandum of Understanding
MRT	Mass Rapid Transport

NBFC	Non Banking Financial Companies
NELP	New Exploration and Licensing Policy
NHDP	National Highway Development Programme
NRG	Non Resident Gujarati
ONGC	Oil and Natural Gas Corporation
PBMC	Performance Based Maintenance Contracts
PCPIR	Petroleum, Chemical and Petrochemical Investment Region
PLL	Petronet LNG Limited
PPP	Public Private Partnership
R&D	Research & Development
R&R	Rehabilitation & Resettlement
RIL	Reliance Industries Limited
Rs Cr	Rupees Crores
SBM	Single Buoy Mooring
SEZ	Special Economic Zones
SH	State Highway
SHDP	State Highway Development Program
SIR	Special Investment Region
SPV	Special Purpose Vehicles
T&D	Transmission and Distribution
TCGL	Tourism Corporation of Gujarat Limited
TFC	Twelfth Finance Commission
TP	Town Planning
UIDSSMT	Urban Infrastructure Development Scheme for Small and Medium Towns

ULB	Urban Local Bodies
UMPP	Ultra Mega Power Plants
VGF	Viability Gap Funding
Vol	Volume
VTMS	Vehicle Traffic Management System
AAI	Airports Authority of India
BIG 2020	Blueprint for Infrastructure in Gujarat 2020
BOT	Build-Operate-Transfer
BPO	Business Process Outsourcing
BSUP	Basic Service to the Urban Poor
CAGR	Compounded Annual Growth Rate
CEPT	Centre for Environmental Planning & Technology
CGD	City Gas Distribution
DFC	Dedicated Freight Corridor
DMIC	Delhi-Mumbai Industrial Corridor
E&P	Exploration & Production
EPC	Engineering Procurement and Construction
FRBM	Fiscal Responsibility & Budget Management
GDP	Gross Domestic Product
GFRA	Gujarat Fiscal Responsibility Act
GID Act	Gujarat Industrial Development Act., 1962
GIDB	Gujarat Infrastructure Development Board
GIDC	Gujarat Industrial Development Corporation
GIFT	Gujarat International Finance Tec city

GIFT	Gujarat International Finance tech city
GIFTCL	Gujarat International Finance Tec-City Company Limited
GMB	Gujarat Maritime Board
GoG	Government of Gujarat
GSPC	Gujarat State Petroleum Corporation
GSPL	Gujarat State Petronet Limited
GTPUDA	Gujarat Town Planning and Urban Development Act
GUDCL	Gujarat Urban Development Company Ltd
GUDM	Gujarat Urban Development Mission
GUTP	Gujarat Integrated Township Policy
GUVNL	Gujarat Urja Vikas Nigam Limited
IDC	Industrial Design Centre
IHSDP	Integrated Housing & Slum Development Programme
IL&FS	Infrastructure Leasing & Financial Services
IT	Information Technology
ITES	Information Technology Enabled Services
JNNURM	Jawaharlal Nehru National Urban Renewal Mission
JNPT	Jawaharlal Nehru Port Trust
JV	Joint Venture
KG basin	Krishna Godavari basin
KPO	Knowledge Process Outsourcing
LA	Land Acquisition
LNG	Liquefied Natural Gas
mmscmd	Million Standard Cubic Metre per Day

mmtpa	Million tonnes per annum
mn	million
MoU	Memorandum of Understanding
MRT	Mass Rapid Transport
NBFC	Non Banking Financial Companies
NELP	New Exploration and Licensing Policy
NHDP	National Highway Development Programme
NRG	Non Resident Gujarati
ONGC	Oil and Natural Gas Corporation
PBMC	Performance Based Maintenance Contracts
PCPIR	Petroleum, Chemical and Petrochemical Investment Region
PLL	Petronet LNG Limited
PPP	Public Private Partnership
R&D	Research & Development
R&R	Rehabilitation & Resettlement
RIL	Reliance Industries Limited
Rs Cr	Rupees Crores
SBM	Single Buoy Mooring
SEZ	Special Economic Zones
SH	State Highway
SHDP	State Highway Development Program
SIR	Special Investment Region
SPV	Special Purpose Vehicles
T&D	Transmission and Distribution

TCGL	Tourism Corporation of Gujarat Limited
TFC	Twelfth Finance Commission
TP	Town Planning
UIDSSMT	Urban Infrastructure Development Scheme for Small and Medium Towns
ULB	Urban Local Bodies
UMPP	Ultra Mega Power Plants
VGF	Viability Gap Funding
Vol	Volume
VTMS	Vehicle Traffic Management System

1. BACKGROUND

Gujarat Infrastructure Agenda – Vision 2010 was the first "Holistic plan" for Infrastructure development in Gujarat. The document was a comprehensive plan for Infrastructure Development in the State of Gujarat. The document was prepared to remove impediments in the implementation of fast track infrastructure projects. The agenda addressed the requirement and presented the State with a coherent and comprehensive Action paper for the integrated development across all the infrastructure sectors.

In year 2005 the preparation of the Blueprint for Infrastructure in Gujarat (BIG 2020) was undertaken as many changes had taken place, since the preparation of the 2010 document, both at planning and policy levels as also in the environment. The BIG 2020 document offered a "Package of Infrastructure Projects", which presented integrated goals, strategy and resources. The projects had been carefully scrutinised for their forward-backward linkages, support systems, funding needs, policies, legislation etc, so as to lead to the sustainable growth of infrastructure in the State.

A review of the BIG 2020 document prepared in 2005 was felt necessary in view of the numerous developments that had taken place, as well as likely future developments that presented a large opportunity for the State. Numerous developments that had taken place and presented a potential for significant investments (post the preparation of the 2005 document) were the launch of the Jawaharlal Nehru National Urban Renewal Mission (JNNURM), the selection of Tata Power for implementation of the 4000 MW imported coal based power project at Mundra and the substantial interest in setting up imported coal based power plants along the coast, significant gas finds by GSPC and the GIFT initiative of the Government of Gujarat(to name a few significant ones). Likely future developments with significant investment implications for the State of Gujarat are the plans for the Dedicated Freight Corridors, Delhi-Mumbai Industrial Corridors, Fast Passenger Corridors, MOUs signed at Global Investors' Summit in 2007.

The key objectives of the study are:

- To review the Gujarat Infrastructure Agenda 2020-BIG 2020 document, focussing on the demand supply scenario and futuristic requirements, as well as changes in the policies, plans and priorities of the central and state government, and to prepare a new plan of infrastructure projects to be implemented in Gujarat in the period till 2020

- To identify areas that need to be focused or leveraged to achieve global competitiveness, keeping in mind the completion of 50 years of the formation of Gujarat State in 2010

- To prepare an Infrastructure Agenda that will identify projects to be implemented through Public Private Participation (PPP)

1.1 The process leading to the preparation of the document

i) The focus of the study was to understand each Department's plans for the sectors being covered. Discussions were held on current and projected demand supply gaps, sector trends, policy bottlenecks (if any) and policy enablers required for facilitating investments. The focus was on including projects in the shelf, based on their private sector participation ability. The data collection and analysis framework is presented in Exhibit 1 below. The demand-supply gap and futuristic requirements were to be based on existing documents. No fresh exercise to be carried out for the same.

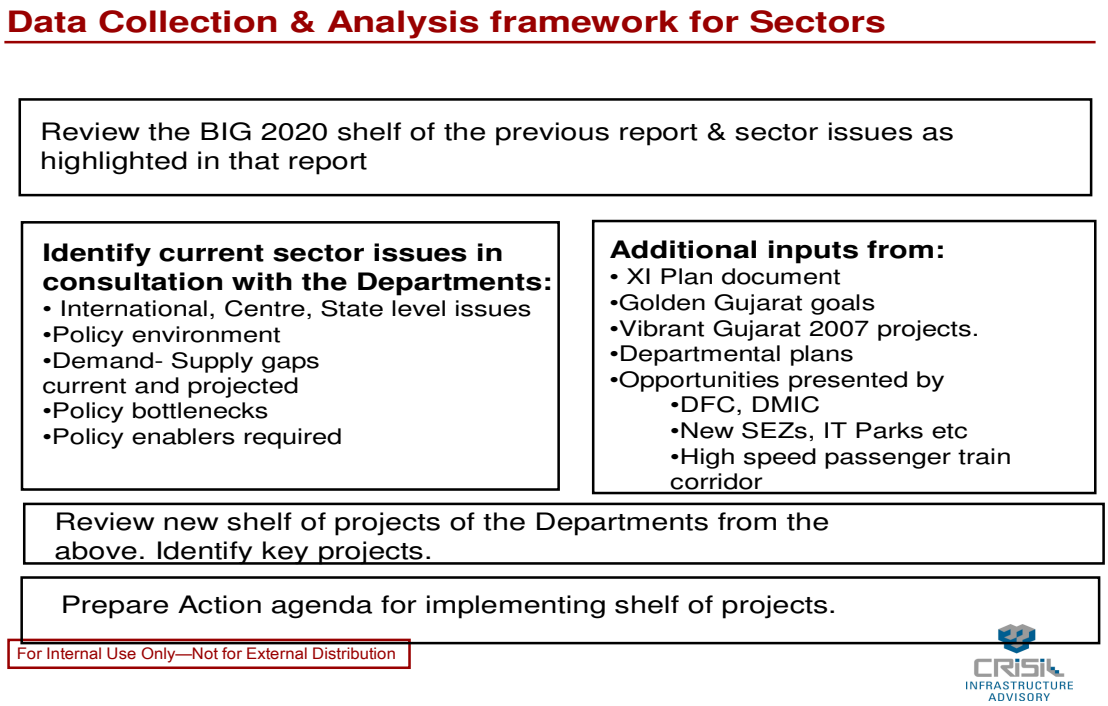
ii) An important part of the process was the validation by the Departments of the shelf of projects presented here, their prioritisation and the identification of key sector issues on the way forward. Numerous interactions were held with the respective Departments to align the Document with the aspirations and plans of the Departments.

iii) The Department's plans and the proposed shelf of projects were the building blocks for identifying gaps, determining inter-sectoral linkages, identifying policy bottlenecks, understanding the infrastructure investment drivers and themes, preparing a Vision etc.

iv) A presentation was made to the Honourable Chief Minister and Principal Secretaries of the Government of Gujarat on September 22, 2008. Valuable suggestions and numerous ideas on the inclusion of evolving technologies made by the Honourable Chief Minister have been incorporated in the Document.

v) A document of this nature will always remain a work in progress and will require regular updating as new opportunities and challenges present themselves.

Exhibit 1-1: Data collection and analysis Framework for each Sector



2.

Please note:

1. Data on existing demand-supply gaps and on projected demand was taken from the Departments. We have applied our judgement where appropriate. A primary exercise to establish the existing and projected demand was not a part of the scope of this assignment.

2. The XI Plan documents and Golden Gujarat goals were not shared by a majority of the Departments.

1.1.1 Report Structure

This final report has three volumes.

Volume 1 A: Presents infrastructure vision for the state. It has been supported by sectoral vision and key strategies leading to achievement of state infrastructure vision.

Volume I B: Presents the overview of the revised BIG 2020. It profiles the economy of the State in 2020 post the implementation of BIG 2002. It captures infrastructure sector visions and strategies driving the BIG 2020 agenda. For each of the sector it presents demand drivers, demand supply gaps, shelf of projects, and key sector issues.

Another section in the Volume I B deals with cross-sectoral issues. These are issues that cut across sectors and need to be dealt with effectively for the success of BIG 2020. The issues identified here are land acquisition and management, acquiring bandwidth and capability for project development on a large scale, and issues with respect to funding of the proposed investments. An analysis of the Government of Gujarat (GoG) finances has been presented for discussion with the Department of Finance on GoG's funding needs for BIG 2020.

Volume II: Presents writeups on each of the 17 sectors to be covered under the study. The writeup on solid waste management has been included in the coverage of the urban sector. The writeups cover in greater detail the progress on the previous BIG 2020, the demand drivers and the outlook on future demand, and the supply and key sector issues to make the supply possible. It also presents the shelf of projects, investments for the same and the phasing of projects.

Volume III: Presents the Action Agenda and project profiles. The action agenda brings into sharp focus the issues to be addressed to successfully achieve the objectives of the revised BIG 2020. The project profiles are a ready reckoner for a number of projects within the shelf of projects planned by each Department.

Appendix

1.2 Terms of Reference

- To identify Infrastructure Projects in sectors Listed below to be implemented by the year 2020. The exercises should be based on demand supply gap and projecting future requirements. The Vision 2020 (BIG 2020) document should be used as base document. Also, other sector specific planning documents should be studied.

    - ✓ Energy: Power and Gas
    - ✓ Industrial Estates including Industrial Parks, SEZs, PCPIR , SIR
    - ✓ Roads, Ports, Railways and Airports
    - ✓ Urban Infrastructure and Solid Waste management
    - ✓ Information Technology and related projects
    - ✓ Education and Health
    - ✓ Human Resource requirement & development

- Identify Focus Sectors. The idea is to promote Cluster Development. Hence, inter sectoral linkages must be identified.

- Prepare a new Vision document.

- Identify projects to be implemented through Private Sector Participation in various sectors in next 12-13 Years. The projects should be identified based on their PSP ability and GIDB Regulation for determining the cost of project. Prepare Action Plan for projects as identified above.

- Examine present legislation and policies pertaining to PSP in various sectors as listed in Annexure – I, GID Act 1999 and GID (Amendment) Act, 2006. Suggest any amendments/new policy initiatives to remove policy bottlenecks, if any, to PSP program.

2. GUJARAT BY 2020 & A VISION FOR GUJARAT

The revised BIG 2020(as also its earlier versions) is a unique exercise undertaken by the Government of Gujarat. Through this exercise the Government is able to develop a comprehensive view of the programmes and projects being planned to position the State for the next level of development. This exercise goes beyond the five-year planning cycle, links individual projects of the Department into an integrated programme for the State and schedules projects in line with the State's priorities. It highlights sectoral as well as cross-sectoral issues that need to be addressed and attempts to present a Vision for the State. The document is a comprehensive communication of the infrastructure development agenda of the State to the developer / financier / external community

In this edition of BIG 2020 an investment of around Rs. **11,80,912** crores is planned for the period up to the year 2020. This investment covers sectors such as energy, transportation, SEZs / investment regions, urban infrastructure, water, tourism, IT, education and health and human resource development. It also presents the phasing of the investments across the period and identifies investments to be made by the Government and the private sector. An action agenda presents areas for focussed action by the Government. The Government of Gujarat has an excellent track record in creating an enabling environment for investments to happen.

The Big 2020 agenda is forward looking. It identifies the opportunities in the environment and positions the State to seize these opportunities, thereby creating a momentum of growth and employment. The programme is also aspirational and reflects the Government of Gujarat's desire to accelerate the State's journey towards becoming a developed economy. In this context, a number of projects in the Agenda go much beyond the minimum demand-supply requirements and are positioned to meet or exceed the relevant global benchmarks. The table below presents programmes that are aspirational and aim to position the State on the next higher plane of development.

Exhibit 2-1: Proposed programmes

S. No	Sector/programme/ project	Remarks
1.	Power generation capacity at 31000 MW	Capacity additions to create surplus capacity both at the energy and peak requirement levels. The State plans to position itself as the power trading hub for the western region. Per capita consumption will continue to be one of the highest in the country.
2.	Renewable Energy/Solar Power	The State has a potential of nearly 10,000 MW of solar generation capacity and nearly 7000MW from wind energy. The State plans to leverage this potential by encouraging renewable sources of energy.

S. No	Sector/programme/ project	Remarks
3.	Natural Gas	The State already has the most developed gas sector in the country. It is the only State with multiple gas grids, two existing LNG terminals and a history of city gas distribution. BIG 2020 plans for additional gas supplies through E&P, more LNG terminals, strengthening of the existing gas grid and city gas distribution to around 200 towns in the State. Per capita consumption will not only be the highest in the country but be comparable with Korea's per capita consumption.
4.	Coal Gasification	The State is well-placed to lead the initiative of producing gas through this route. Gujarat already has three coal gasification projects under implementation and a fourth one on the cards.
5.	Leveraging on the DFC/DMIC opportunity	BIG 2020 presents' a comprehensive approach to providing high quality infrastructure and connectivity to the Special Investment Regions, Industrial areas, SEZs that will be setup in the DMIC influence area. This includes high quality road, rail and air linkages from the growth centres to the Ports and DFC. A favourable township policy to encourage new townships near the growth centres.
6.	Gujarat International Finance Tec City (GIFT)	An international financial centre which would be one of its kind hub in India for global IT and financial services is planned.
7.	Bullet train between Ahmedabad & Mumbai.	Implementing a bullet train between Ahmedabad and Mumbai will reduce the commuting time from 6 hrs to 2 hrs. This project is expected to be executed in collaboration with Indian Railways and the governments of Gujarat and Maharashtra. Bullet trains connecting key centres viz. Ahmedabad-Rajkot-Veraval and Ahmedabad-Jamnagar-Dwarka have also been conceptualised.
8.	Metro Rail Transport Project	High speed corridor between Ahmedabad and Gandhinagar to meet the traffic demand between the two cities.
9.	Kalpasar Project	This is an ambitious project to provide fresh water, reclaim land for development, and improve transportation across Gulf of Khambat.

2.1 Infrastructure Vision for Gujarat

A vision defines a future goal or an objective. Vision for a State defines a desired future while recognising the current status, achievements and momentum. The vision captures the perceptions and aspirations of its leaders and its people while drawing on the reality of today. The vision need not be limited by today's reality but should be ambitious yet achievable. For the vision to be successful it should resonate with the people of the State. It should create a sense of pride and should marshal people's energies to fulfil the vision

Articulating a vision that energises its people towards a desired goal is the leader's prerogative. A vision has the power to galvanise an entire nation towards a desired goal. JF Kennedy's vision in 1961 of putting a man on the moon by the end of the decade galvanised the entire nation and the country proceeded to achieve it by mid 1969.

On May 25, 1961, President John F. Kennedy appeared before a joint session of Congress and challenged the lawmakers -- and the nation -- to get behind a dramatic new goal: ***Sending a man to the moon by the end of the decade.***

"No single space project in this period will be more impressive to mankind, or more important for the long-range exploration of space," he said. "And none will be so difficult or expensive to accomplish."

Vision for Korea and Singapore

In 2006, the Government of Korea presented a long-term strategy and vision called `Vision 2030'. Vision 2030 was designed to cope with the current and future problems facing the nation. In the mid 1980s/early 1990s Singapore defined a vision for itself. It formulated an economic plan and stated the strategies and programmes for Singapore to realise its vision.

Vision for Korea

At the point of formulating its vision in 2006 Korea was standing at the cross roads of becoming an advanced country. Korea had grown into the tenth largest economy in the world and expected to have a per capita income of US $ 20,000 by 2008. However, the country's welfare spending was merely a third of that spent by industrialised countries and Korea's quality of life was the lowest amongst the OECD[1] members. It had long standing structural difficulties including aging population, low fertility rate, low economic growth and a socio-economic divide.

Korea's strategy was anchored on pursuing growth and welfare simultaneously. Spending on welfare was considered to be an investment into the future. This was a paradigm shift from material/monetary resources to investment in human resources. ***Vision 2020 defined Korea as a hopeful nation in harmony.***

[1] Organisation for Economic Cooperation and Development

"Growth and welfare are two sides of the coin; they have to be pursued simultaneously"

	Traditional Paradigm	Simultaneous Growth and Welfare
Background	Need to escape from poverty Growth and distribution linked	Economic polarization Wide gap between growth and distribution
The Role of the Government	Emphasis on growth	Harmonisation of growth and welfare
Growth Strategy	Quantitative input Unbalanced growth Government-led	Innovation – driven Balanced growth Market-led
Welfare Strategy	Reliance on family and community Welfare considered handout	Government role increased Welfare considered investment in the future
Type of investment	Material/monetary	Investment made in human resources/social capital *

* Social capital: Mutual trust, cooperation and the openness displayed by members of the community, plus the laws, norms and social networks promoting aforementioned qualities of the community.

Vision 2030- Korea envisions a country where economic growth and welfare standards surge ahead synergistically by the year 2030; it also envisions a nation where every citizen is given an equal opportunity and a reason for hope.

Vision for Singapore: a developed country in the first league

The vision articulated in the late eighties/early nineties was to attain the status and characteristics of a first league developed country within the next 30 to 40 years. Key facets of the Vision were economic dynamism, a high quality of life, a strong national identity and the configuration of the global city.

Strategies for the long term, which would also produce some benefits for Singapore in the short to medium term, were directed at maintaining and extending the nation's inter-national competitiveness. Eight strategic thrusts were identified to help propel Singapore's economic and social progress to that of a developed country. They were –

- Enhancing Human Resources
- Promoting National Teamwork
- Becoming Internationally Oriented
- Creating a Conducive Climate for Innovation
- Developing Manufacturing and Service Clusters
- Spearheading Economic Redevelopment
- Maintaining International Competitiveness
- Reducing Vulnerability

Both the visions i.e. of Korea and Singapore were looking 20-30 years into the future. On the economic front, both the nations are aiming to reach the developed world benchmarks. Korea was targeting to reach the per capita income of Switzerland (which is the highest amongst the developed countries) and Singapore was planning to attain the status and characteristics of a developed country. The focus of Korea is on achieving its Vision by simultaneously pursuing growth and welfare, while Singapore is emphasising innovation, international competitiveness, development of manufacturing and service clusters and reducing vulnerability. Both the Visions while ambitious are anchored in their respective realities.

Gujarat Today – India's Leading State

Gujarat is the most industrialised state in the country and leads India in the production of pharmaceuticals, soda ash, salt, plastics, petrochemicals and chemicals. It is also the world's third largest and the country's largest crude oil refining hub. It is the world's largest producer of processed diamonds, and the third largest producer of denim.

Gujarat is a leading maritime state of India with over 41 ports providing maritime access to North Indian states that constitute about 25 percent of India's GDP[2]. Gujarat is has one of the most developed energy sectors of the country with a per capita consumption of electricity double the national average. It is the only State with a state-wide gas grid, multiple gas suppliers, two LNG terminals and a history of city gas distribution.

Gujarat is one of the most urbanised states in the country with over 38 percent of its population residing in urban areas as compared to 28 percent for the rest of India. It has one of the highest networks of surfaced roads -- over 95 percent compared to India's 57 percent. About 98.8 percent of its villages are connected with motorable roads.

Gujarat has significantly addressed its water problems by using the strategies of rain water harvesting, check dams and inter-basin transfers. Twenty rivers have been interlinked and the challenge of uneven water distribution met through inter-basin transfers. These projects have substantially raised the water table across the state and consequent availability of water for irrigation; this is expected to bring about stable growth of the agriculture sector across the state. The *Sardar Sarovar* project and the *Sujalam Suphalam* projects, being implemented by the Government of Gujarat, amongst India's largest irrigation and water supply projects, will further improve Gujarat's water security.

Gujarat was one of the first states in India to implement power sector reforms and restructure its power sector utilities to wipe out losses. Today, the assured availability of good quality power is one of the key distinguishing features of the State. Under the *Jyotigram* scheme, it has ensured three-phase, round-the-clock electricity in all the 18,000 villages of the state. It has helped revive rural industries. These, along with assured availability of water, have helped reduce the rural-urban divide and migration from villages to cities.

[2] Gross Domestic Product

In the last four years, Gujarat has developed many Special Economic Zones (SEZs). These SEZs are expected to attract industrial investments of over Rs. 250,000 crores (USD 53 bn).

Under the "Urban Development Year 2005," it undertook several initiatives to deal with the challenges of urbanisation. In the last four-five years, Gujarat has emerged as one of the most advanced states in implementing various municipal reforms. It is currently executing many urban development projects covering urban transport and basic services like water and sanitation. Gujarat is one of the first states to have an integrated township policy that leverages private sector participation for planned and organised development of cities.

Through *Panchamruth*, the state has been able to bring about uniformity in development and substantially improve the quality of life. It has been able to significantly increase the per capita income and create large number of jobs. It has doubled the intake of technical institutions by setting up institutes of various disciplines to meet the growing need for technical and skilled manpower. The government has aggressively undertaken schemes for the welfare of marginalized sections of society like fishermen and tribals.

Through the *Chirnjeevi* scheme, Gujarat has partnered with registered private gynaecologists to carry out institutional child deliveries of women belonging to the poorer sections of society. It has also introduced emergency services in partnership with the private sector to save lives of accident victims.

Gujarat has also implemented a programme called "SWAGAT" (State-Wide Attention on Grievances by Application of Technology) which enables the common citizen to take his/her problems to the highest level of the Chief Minister. This network uses Gujarat's huge Wide Area Network connecting government offices up to the tehsil level with the State Secretariat. This is the largest Internet protocol-based network in the Asia-Pacific region and the second largest in the world. Land records in Gujarat are maintained on a web based platform ensuring transparency in land transactions.

Gujarat was the first state to develop regulatory frameworks for PPP through the Gujarat Infrastructure Development Act. The Gujarat Infrastructure Development Board (GIDB) while administering the act has pioneered many PPP initiatives across sectors and is the most admired infrastructure development agency in India. It was the first state to successfully implement a policy for private sector participation in ports. As a result, it has many private sector ports and has attracted India's largest quantum of private investment. It has replicated its success in the Ports sector and extended it to power, rail and road infrastructure as well as social sectors like hospitals and education. The PPP initiative has enabled the government to optimise the utilisation of precious public funds for welfare and development activities, aimed at inclusive growth.

People are active partners in various development initiatives in Gujarat. This ensures that the government is able undertake and achieve tasks on a scale which is unprecedented in the country. It has created a large number of water harvesting structures like farm ponds and checkdams through people's participation. This has substantially improved ground water levels. A large number of villages affected by water problems have benefited through innovative community-based rural drinking water and irrigation schemes. It has substantially increased enrolment and retention of children in schools through awareness and people's participation.

As a result of all these initiatives, Gujarat stands far ahead of other states of India in the availability of quality physical, industrial and social Infrastructure. Gujarat's achievements and the entrepreneurial spirit of Gujaratis' enable them to think bigger and aim higher. There is a conviction that Gujarat should be benchmarking itself to the developed countries of the world and is working towards GDP growth in excess of 11 percent in the coming years to bridge the gap. The infrastructure vision for Gujarat articulates this aspiration of its people while building on the reality of today.

Gujarat by 2020

At the end of 2020, the State would achieve benchmarks in numerous areas which are the best in the country and comparable to the other Upper Middle Income (UMI)/ developed countries of the world. A profile of the State in 2020 and a comparison on some benchmarks is presented below.

By 2020, Gujarat would have had years of high economic growth sustained by the investments outlined in this report. Real GSDP would have grown three times to Rs. 6.46 lakhs crores. The per capita income would be around US $ 12615 (in PPP terms) and comparable with UMI economies. Gujarat would be an economy with world-class infrastructure and the preferred destination for domestic and international investments. A growing knowledge and services economy which is anchored on inclusive growth and sustainable development, where cities form hubs of economic activity and the fruits of development including safe and affordable drinking water, power, road connectivity and telecom infrastructure are available in the furthest corners of the State.

Gujarat in 2020 will be the energy hub for Western and Northern India. It would have one of the highest per capita power consumption in the country and would be an important trader of surplus power in. Similarly, it would have the highest per capita gas consumption at around 567 scm (comparable to the current per capita consumption of Korea) with gas reaching households across the State as also a gas trading hub of the region.

The development of world class infrastructure around key locations in DMIC and with high quality connectivity to ports, DFC and economic centres would have generated a level of economic development unseen before. It would be attracting large domestic and international investments into Gujarat. Key segments of the road network would be of international standards. Select ports would operate at levels of efficiency comparable with the best in the world. Industrial output would be many multiples of the current level and generating additional industrial employment of nearly 30 lakhs.

By 2020 Gujarat would transform into a thriving knowledge and service economy. The GIFT initiative would have created a platform for scaling up finance and technology related services in Gujarat. The proposed knowledge corridors would create universities and centres of excellence in various disciplines and generate the required supply of skilled manpower. The proposed medical townships would have not only created better medical facilities and learning centres but would have become a base for state of the art medical services attracting medical tourism from across the world. The tourism regions would provide a spurt to tourist traffic making Gujarat the desired tourist destination.

Gujarat's already high urbanisation levels would have crossed 50% in this period. The planned approach to the provision of basic services in smaller corporations and municipalities and the transformation of

Ahmedabad, Vadodara, Surat and Rajkot as cities of excellence would be presented as a success story of urbanisation. The implementation of the Gujarat Integrated Township Policy would have led to the creation of a number of new townships along the growth centres in DMIC and Ports.

Providing access to adequate, safe, affordable water has been an important objective of the Government. With the Sardar Sarovar Nigam Limited project largely implemented and with Kalpasar mega project to be implemented by 2020, access to adequate, safe and affordable water to all the corners of the State would have been achieved.

Gujarat's focus on use of renewable energy for power generation, extensive distribution and use of natural gas, the provision of services for sewerage and solid waste, the focus on hazardous waste management, effluent treatment, creation of waste exchanges etc would have resulted in a cleaner and more sustainable environment.

The ultimate goal of BIG 2020 is to place Gujarat at the top of the Human Development Index. Rapid and balanced GDP growth, facilitated by the various investment programmes that have been laid out in the strategy document, is one factor contributing to this objective. Investment in social services and up gradation of service delivery of health, education and other critical services directly contributing to quality of life form another, critical component of the overall strategy to achieve this objective. The State would have achieved its objectives by intensely pursuing both the streams.

The government is focused on simultaneous economic and social development. BIG 2020 is one such initiative in the infrastructure space. The objective is to create world class infrastructure. Many more initiatives have been undertaken in other areas of the economy with the goal of bringing about balanced economic and social development. Achieving developed country benchmarks on all parameters is a long journey. BIG 2020 will take Gujarat close to benchmarks of UMI/ developed countries in the year 2020 on many counts.

The Vision

To make Gujarat a globally preferred place to live in and to do business through accelerated, balanced, inclusive and sustainable growth driven by robust social, industrial and physical infrastructure.

The Strategy

Gujarat's economy today has reached a critical size which is strong platform to launch itself on an accelerated and high growth trajectory. Gujarat will provide robust infrastructure that will form the base for sustaining high growth. Robust infrastructure includes infrastructure that is benchmarked and competing with the best in the world to provide a competitive edge for Gujarat to attract and sustain investments in various sectors of the economy. The infrastructure will be reliable, well spread and balanced to ensure that the fruits of development reach all in furthest corners of the state.

The framework of action for achieving the vision comprises of infrastructure sector visions, strategies and a shelf of projects. These will guide the infrastructure sectors in an orchestrated manner considering

sector priorities and inter linkages with other sectors. The strategies leading to infrastructure vision are discussed in following sections. The overall development in state infrastructure development will be contributed by growth in each of the infrastructure sector. Thus strategies to achieve infrastructure vision of the state translate into vision for the each of the relevant infrastructure sector.

2.2 Gujarat: A Macroeconomic Backdrop to BIG2020

Gujarat's Economic Structure and Performance

Agriculture

Agriculture in Gujarat accounts for around 20 per cent of the State's GDP, slightly less than the share of this sector for the country as a whole in 2005-06. However, the growth pattern of agriculture in the state has been extremely volatile, much more so than for the country as a whole. Over the previous six years, there were three years of negative growth, interspersed by three years of strongly positive growth, exceeding 20 per cent. Such volatility is always a burden on farmers; apart from creating income uncertainty and rendering rural households vulnerable to periods of significant deprivation, it deters investments, which would have contributed to raising productivity. The main reason for the volatility is the high dependence of agriculture in the state on rainfall. Irrigation systems are relatively undeveloped.

This scenario is likely to change with the expansion of the irrigation network emanating from the Narmada River projects. The network will help to stabilize agricultural production by providing access to water to large parts of South Gujarat and, eventually, Saurashtra. Cropping choices made by farmers will rapidly adjust to the improvement in the availability of water, giving them the flexibility to respond to market price signals. This will also help to both raise the value of output and reduce its volatility.

While it is difficult to visualise agriculture as a growth driver over long periods of time, the significant change in the water situation in Gujarat completely changes the picture. At least for the next five to ten years, the widening spread of the irrigation network will cause the growth rate of the sector to remain well above its historical record; more importantly, it will significantly narrow the band within which the annual rate fluctuates. The new water scenario should, in turn, facilitate both investments by farmers and public investments that will complement the water system in systematically raising agricultural productivity.

Industry

Gujarat is a leader among the Indian states as far as the industrial sector is concerned. The share of industry (covering mining, manufacturing, electricity and construction, but dominated by manufacturing) in the State's GDP is close to 40 per cent, compared to about 25 per cent for the country as a whole. A combination of historical factors, which made the state home to early industrialization in textiles, business-friendly policies even in a relatively restrictive regime prior to the liberalization of 1991, which have continued since then and natural advantages like the coastline, has contributed to this status. The advantage the state has in manufacturing as a result of both history and natural advantages is going to persist over the coming decade.

Large investments in Ports as well as supporting investments in infrastructure and facilities will provide an attractive investment environment to companies and entrepreneurs who either import inputs or export

their products. Proximity to several large, prosperous and industrialised urban markets also make Gujarat an attractive location for producers oriented to the domestic market. With these advantages, the industrial sector will continue to drive the state economy. Several new infrastructure programmes will help to cement the advantage that the state has over others in this regard.

Services

The pattern in the services sector is, understandably, contrary to that of industry. Gujarat's services sector accounts for a smaller share of its GDP than in the country as a whole. The difference is quite significant, over 10 percentage points and the gap has widened slightly over time, indicating that services in Gujarat have been growing at a somewhat slower rate than in the country as a whole. Given Gujarat's comparative advantage in manufacturing, it is not surprising that services have not performed as well.

However, a fundamental driver of services growth is the availability and quality of human capital. Significant investments in education and creation of skills that employers can immediately put to use are a critical element of a services-led growth strategy. Some of the advantages that accrue to manufacturing, such as proximity to large urban centres, can also work in favour of services. Other factors include high quality infrastructure for operations as well as for residential and leisure purposes, in order to attract or retain workers.

In short, the macroeconomic scenario in Gujarat supports a balanced strategy that takes advantage of the impact of increased water availability on agricultural growth, reinforces its inherent competitive advantages in industry and pushes services growth through significant investments in education, which themselves offer commercial opportunities.

Macroeconomic Scenarios for BIG 2020: High growth scenario to generate significant increases in per capita incomes and employment

The past data (1999-2000 to 2006-2007) on Gujarat State Domestic Product shows an annual average growth rate of 7.5 per cent. The agriculture sector shows a huge volatility with very high negative growth rate in one year and a high positive in the following year and so on. This amounts to a compounded annual growth rate (CAGR) of over 9.8 per cent. The industry sector experienced a CAGR of 6.9 per cent and services 7.2 per cent. However, assuming an even and gradual growth in agriculture sector in the long run, it is expected that agriculture would grow at the rate of 5 per cent annually. The justification for this also comes from the China example(see box below), which shows how a fast growing economy is primarily driven by its industry and services sectors while the contribution of the agriculture sector keeps declining. With the same rationale, we assume Gujarat industry and services GDP will grow at the rate of 8 per cent till 2020. With these sectoral growth rates applied on latest available GSDP data, that is for 2005-06, we arrive at the GSDP for the current year, that is, 2008-09 and also for the year 2020. The GSDP, hence obtained for the year 2020 is termed as GSDP 2020 – Business as Usual (BAU).

But the potential GSDP growth rate is expected to be much higher, given that the State's plans to invest in numerous infrastructure projects over these years. The present study observes that the total investment in the shelf of projects till 2020 is estimated at over Rs. 860,000 crores. This essentially is the new investment coming up in the State and hence translates to an incremental GSDP, which when added

to GSDP 2020 BAU, gives the GSDP 2020 – High Growth (HG) numbers. The capital coefficients of the major sectors - agriculture, industry and services – are used to obtain the sectoral GSDP, given the investment in these sectors.

As we arrive at the sectoral GSDP 2020 for the HG scenario, the CAGR is computed for the three sectors and overall GSDP. These growth rates work out to be 6 per cent, 11 per cent and 12 per cent for agriculture, industry and services respectively.

Exhibit 2-2: Structure of Gujarat GSDP

(Rs. Crore)

	Agriculture	Industry	Services	Overall
Base year 2009	35816	85925	88438	210179
2020 – BAU	61257	200346	206206	467809
2020 – HG	67989	270815	307636	646440

	Percentage distribution			
	Agriculture	Industry	Services	Overall
Base year 2009	17.0	40.9	42.1	100.0
2020 – BAU	13.1	42.8	44.1	100.0
2020 – HG	10.5	41.9	47.6	100.0

Further, assuming the Gujarat population to grow at an average annual rate of 1.4 per cent (projected by UN for India); we get an estimated population of the state for 2020. Using this, the per capita GSDP for the year 2020 works out to be Rs. 69704 in the BAU scenario and Rs. 96320 in the HG scenario. For the current year, the per capita GSDP is Rs. 36445. In PPP dollars, the per capita income of Gujarat in current year is $3019 and in 2020, it is estimated to be $8358 in the BAU scenario and $12615 in the HG scenario.

It would be interesting to work out the impact of growth on employment opportunities. For this, we start with the employment for the year 2003-04, obtained from the NSSO 61st Round of Employment and Unemployment. Taking the sectoral employment elasticity from Planning Commission Taskforce on Employment Opportunities, we work out the percentage growth in the number of jobs in the three major sectors of the state. Employment elasticity refers to the percentage increase in employment with 1 per cent increase in the GDP.

Exhibit 2-3: Gujarat Employment Prospects

	Agriculture	Industry	Services	Overall
GSDP annual growth rate – BAU	5.0	8.0	8.0	7.5
GSDP annual growth rate – HG	6.0	11.0	12.0	10.75
Employment Elasticity's	0.3	0.6	0.5	
Annual Growth in number of jobs – BAU	1.5	4.8	4.0	
Annual Growth in number of jobs – HG	1.8	6.6	6.0	
Number of jobs 2003-04	10983723	4300242	4619436	19903853
Annual increase in number of jobs - BAU	164756	206412	184777	555945
Annual increase in number of jobs – HG	197707	283816	277166	758689

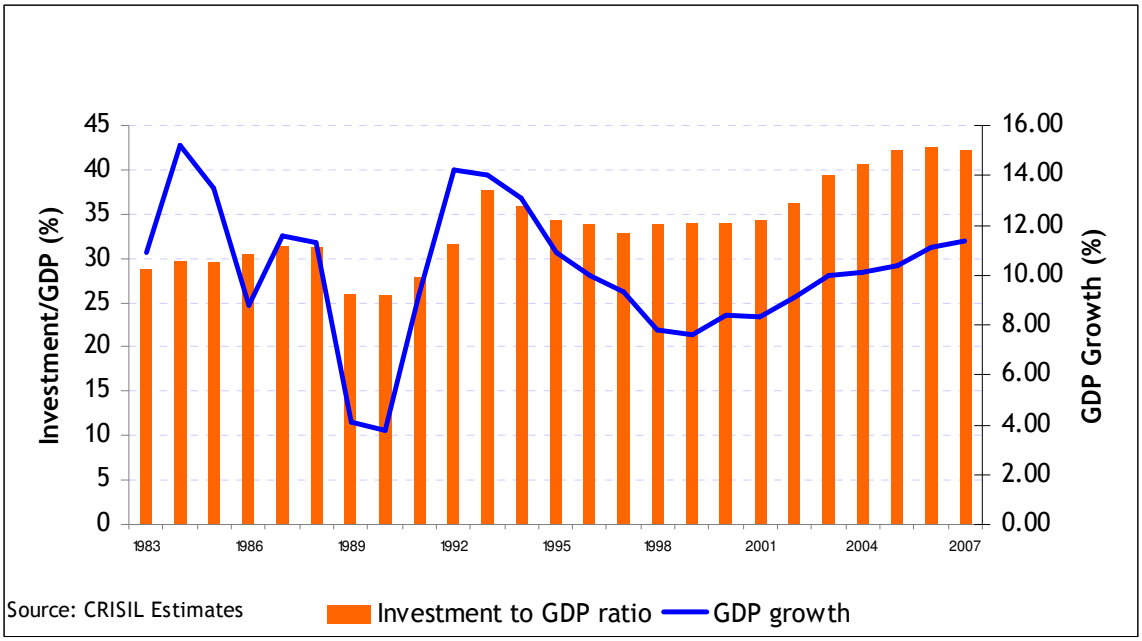
The Lessons from China – Limits to Investment-driven Growth

Before we develop balanced growth scenarios for Gujarat, we would like to draw some important lessons from the Chinese experience. Essentially, China's economic structure has evolved in a fashion similar to Gujarat's, both being dominated by manufacturing. Analysing China's growth pattern over a relatively long period of time provides some insights into the constraints that Gujarat may face as it implements the balanced growth strategy that was pointed to in the introductory discussion.

The chart below plots China's Investment (Gross Fixed Capital Formation) to GDP ratio and its GDP growth rates over the years 1983 to 2007. The graph shows that Chinese growth has largely been associated with high rates of investment but at the same time, it raises a question of whether the investment can continue to be the main source of growth.

The investment to GDP ratio has risen strongly in the last two decades. It moved from 28.9 per cent in 1983 to 42.2 per cent in 2007. From 27 per cent in early 1980s, the share of investment in GDP crossed 31 percent by the end of the decade. This moved further up in 1990s to settle at an average of 33 per cent for the decade. This share reached well beyond 42 per cent in recent years. On the other hand, GDP growth rate achieved a peak of 14.2 per cent in early 1990s, and fell to a low of 7.6 per cent in 1999, when the investment to GDP ratio was 33 per cent. As this ratio started to rise again, the growth too picked up. The growth, however, is steady and gradual.

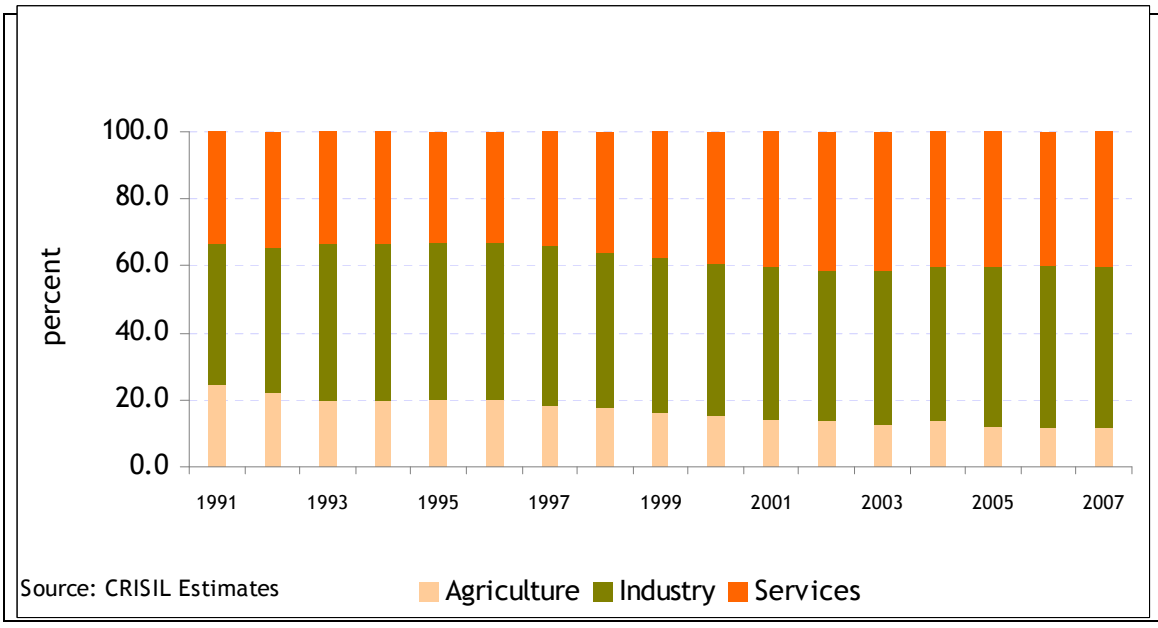
Exhibit 2-4: Investment driven growth in China



Source: CRISIL Estimates

The following chart gives the share of agriculture, industry and services sector in Chinese GDP over the years. It is evident that the relative contribution of the agriculture sector in GDP is declining, and the overall economic growth is primarily due to the growth in industry and the services sectors. China is progressively moving away from the agricultural economy to a manufacturing and services based economy.

Exhibit 2-5: Changing Structure of Chinese Economy



Source: CRISIL Estimates

There are two key lessons to be drawn from the description of the Chinese experience as described above:

1. Massive amounts of investment by themselves can only raise the growth rate by small increments. Putting more money into development activity is not sufficient. Investment levels are important, but the sectoral distribution, efficiency of implementation and maintenance of facilities are all integral to sustaining growth. If these aspects are taken care of, the productivity of investment in terms of enhancing the growth rate will be higher. Without these, more investment will not necessarily yield higher sustained growth. “Smart” investment rather than “more” investment should be the priority. Even after all this, the growth rate cannot be realistically expected to be more than in the low double digits over long periods of time.

2. As indicated earlier, agriculture is not a growth engine over long periods of time. It typically grows at a slower rate than industry and services, leading to a steady decline in its share of GDP. Gujarat will be able to escape this trend because of the significant discontinuity that increased water availability has created in its agriculture sector. However, the benefits of this in terms of growth will plateau after the full extent of enhancement has been achieved and the growth pattern will return to more historically consistent trends, illustrated by the Chinese experience. Long-term development plans for the state should take account of this and prepare adequately for the inevitable transition as large numbers of people leave agriculture to look for work in industry and services.

Appendix: The Ultimate Objective- Human Development

GDP growth is not an end in itself. It is a means to achieve a significant and permanent improvement in the quality of life of the citizens of the state. Gujarat has typically been close to the top of the ranking of Indian states in terms of the Human Development Index, which aggregates per capita income, life expectancy and infant mortality. This index had been calculated in parallel with the decadal Census of India by the Planning Commission. Gujarat ranked 4 in 1981 (Kerala was first), 6 in 1991 (Kerala was again first) and remained in the 6th place in 2001 (Kerala retained its top ranking).

The ultimate goal of BIG 2020 must be to place Gujarat at the top of the Human Development Index by 2021. Rapid and balanced GDP growth, facilitated by the various investment programmes that have been laid out in the strategy document, is one factor contributing to this objective. Investment in social services and up gradation of service delivery of health, education and other critical services directly contributing to the quality of life are another, critical component of the overall strategy to achieve this objective.

Table 3 provides a picture of where Gujarat stands on specific social welfare indicators that go beyond the HDI. Gujarat's status is compared with the average for a group of 27 countries that have been classified by the World Bank as Upper Middle Income (UMI) countries. Gujarat's per capita income level by 2020, if it achieves the growth rate targets set by BIG 2020, would make it eligible to enter this group measured by their standards today. The state must ensure that it matches this performance with significant improvements in the social indicators in which it is currently lagging significantly.

Exhibit 2-6: Status of Gujarat on social welfare indicators

	Indicator	Unit	Reference	Gujarat	UMIs	Gap
			YEAR			**ASSESSMENT**
	DEMOGRAPHIC BALANCE					(H/M/L)
1	Female Population	% of total	2005	47.9	51.4	**H**
2	Urban Population	% of total	2004	79.7	91.0	**M**
	SURVIVAL AND LONGEVITY					
3	Life Expectancy	years	2005	63.9	70.0	**M**
4	Life Expectancy - Male	years	2005	63.1	66.0	**M**
5	Life Expectancy - Female	years	2005	64.1	74.0	**M**

	Indicator	Unit	Reference	Gujarat	UMIs	Gap
6	Infant Mortality Rate	per 1000 live births	2005	54.0	22.0	**H**
	HEALTH SERVICES					
	Physician Ratio	per 1000 people	2000-05	0.7	2.7	**H**
	Hospital Bed Ratio	per 1000 people	2000-05	0.4	5.7	**H**
	WORKFORCE					
7	Females in the Labour Force	% of total	2005	28.0	40.9	**H**
8	Labour force Participation rate - Male	% of pop of age 15-64	2005	87.1	77.9	**L**
9	Labour force Participation rate - Female	% of pop of age 15-64	2005	36.5	52.6	**H**
	EDUCATIONAL ATTAINMENT					
10	Primary School Pass-out Rate - Male	% of relevant age group	2005	71.2	95.0	**H**
11	Primary School Pass-out Rate - Female	% of relevant age group	2005	75.8	95.0	**H**
12	Primary School Pass-out Rate - Total	% of relevant age group	2005	73.3	95.0	**H**
13						
	INFRASTRUCTURE					

	Indicator	Unit	Reference	Gujarat	UMIs	Gap
14	Electricity consumption	per capita KWh	2004	908.0	3454.0	**H**
15	Transmission and distribution losses	% of output	2004	30.3	12.0	**H**
16	Access to an improved water source	% of population	2004	90.8	94.0	**L**
17	Access to improved sanitation facilities	% of population	2004	36.4	84.0	**H**
	Sources: For UMIs: World Development Indicators, World Bank					
	For Gujarat: Various State and Central Govt. Publications					

Gap Analysis: High Gap Indicators

Demographic Balance

Female Population*: Gujarat's proportion of females is estimated to be 47.9 per cent, compared to the UMI proportion of 51.4 per cent. Although the gap does not appear large, a universal characteristic of development is a female majority and it is important that the state's development programmes focus on gender neutrality in births and equal nurture of girl children. Gujarat will never be accorded the full recognition due to its economic achievements if it continues to stand out on this indicator.*

Survival and Longevity

Infant Mortality Rate: *54 infants die for every 1000 live births in Gujarat, compared with 22 in the UMI set.*

This is clearly a significant gap and focuses attention on the need to enhance pre-natal care, widespread access to medical facilities for birthing and post-natal care and support systems such as education and nutritional supplements. To the extent that there is a gender bias in this parameter, it impinges on the gender balance indicator as well.

Health Services

Physician Ratio: Gujarat has 0.7 physicians per 1000 people, compared with the UMI level of 2.7.

Hospital Bed Ratio: *Gujarat has an even greater disadvantage in terms of hospital beds, with only 0.4 beds per 1000 people, compared to the UMI level of 5.7.*

Both these indicators clearly show that Gujarat has to emphasize investments in health care facilities to both create physical capacity and increase the number of physicians working in the state. More educational capacity as well as better financial incentives will be necessary to bridge this gap.

Workforce

Females in the Labour Force: *Only 28 per cent of females in Gujarat are estimated to be in the workforce, i.e. offering themselves for employment, compared with 40.9 per cent in the UMIs.*

Labour Force Participation Rate – *Female: Related to the above, of the working-age female population in Gujarat, only 36.5 per cent declared themselves to be in the workforce, compared with 52.6 per cent in the UMI countries.*

Both indicators point to the difficulties that females face in accessing employment opportunities. Socio-cultural barriers apart (these exist to some degree in the UMI set of countries as well) the ability to balance work and maternal responsibilities is a critical factor in the female decision to work. Since getting more people into productive jobs is an imperative for growth, it should be a policy objective to facilitate female participation by providing or incentivizing support that would help them find that balance. Also, related to the sectoral diversification imperative, addressed in the first section, facilitating the growth of sectors, which provide larger opportunities for female workers, will make a significant contribution to this objective.

Educational Attainment

Primary School Pass-out Rate: *This reflects a minimal benchmark of educational attainment. The gap between Gujarat's attainments and that of the UMI set of countries is relatively high. 73.3 per cent of Gujarat students pass out, compared with 95 per cent in the UMIs. Importantly, and related to a number of indicators discussed above, the female pass-out ratio, at 75.8 per cent, is higher than the male pass-out ratio of 71.2 per cent. The ratio is the same across genders in the UMIs.*

More schools, greater incentives to attend and stay on in school and aligning of the curriculum more relevant by directly relating the subject matter taught and the certification process to market requirements are imperative in addressing this gap. These initiatives are critical complements to the growth imperatives discussed in the first section.

Infrastructure

Electricity Consumption: *Gujarat's per capita consumption of electricity is 908 Kwh, compared with 3454 Kwh among the UMIs.*

T&D Losses**:** 30.3 per cent of total generation is lost in Gujarat, compared to 12 per cent in the UMIs.

The two factors are related to an extent. For a given amount of generation, lowering losses will result in higher consumption. However, even if Gujarat narrows the gap as far as losses are concerned, it will still

be some distance away from the UMI benchmark in a business-as-usual scenario. More capacity and more efficient distribution, which in turn is facilitated by cost-based pricing and strict monitoring are critical to increasing power availability and affordability in the state.

Access to improved sanitation facilities: *36.4 per cent of Gujarat's population has access to improved sanitation facilities, compared with 84 per cent in the UMIs.*

Although Gujarat is quite close already to the UMI level as far as access to water sources is concerned, it is clearly far behind on sanitation. A strategy to rapidly expand access, based on investments and effective governance mechanisms at the local level is warranted. This should be viewed as complementary to the health and IMR agendas, since both those indicators are related to inadequate sanitation facilities.

3. KEY STRATEGIES DRIVING THE BIG 2020 AGENDA

The Gujarat Infrastructure Agenda/Big 2020 comprises a shelf of projects conceived by different Departments and integrated into an overall agenda based on the priorities and inter-relationships of the projects. The agenda prioritises the projects, identifies sector issues, inter-linkages with other projects and proposes an action agenda.

However there are larger forces that are shaping the formulation of projects. For example the formulation of power projects is driven by the growing demand-supply gap. The demand-supply (D-S) gap is caused by the energy needs of a growing economy and per capita incomes. Projects could be formulated to meet different levels of the projected D-S gap. However the aspiration to meet/ exceed the future needs of power & gas would drive the selection of the quantum and size of projects at a level different from say achieving a demand–supply gap of say 5%. We have attempted to understand & identify these larger forces and called them strategies. Key strategies are seen to be driving the Big 2020 Agenda as well as infrastructure vision of the state. Each strategy is individually a very powerful driver of economic growth, collectively they account for the investments in the BIG 2020 agenda.

These strategies will guide the infrastructure sectors in an orchestrated manner considering sector priorities and inter linkages with other sectors. The key strategies are:

1. ***Securing the future energy needs of Gujarat's growing economy.***

    - Achieving UMI[3] countries per capita power generation and consumption benchmarks by building large capacities in power generation;

    - Making gas a preferred fuel across the urban and industrial landscape of Gujarat;

2. ***Accelerating industrialisation by developing world class and globally competitive industrial infrastructure;***

3. ***Developing seamless, efficient and high speed integrated transport networks conforming to global standards;***

4. ***Becoming a major international player in sea freight logistics;***

5. ***Developing cities that are safe, efficient, clean and green, and offer a high quality of life;***

6. ***Ensuring safe, reliable and affordable drinking water across Gujarat, and provide stable water supply for agriculture;***

[3] Upper Middle Income Countries

7. ***Making Gujarat a global tourist destination***

8. ***Creating good healthcare infrastructure to achieve healthcare indices and to reach UMI benchmarks;***

9. ***Creating widespread network of educational institutions to make Gujarat a globally recognised knowledge society***

10. ***Creating a network of post harvest agriculture infrastructure to ensure better access to markets***

Some sector strategies cut across departments. In such cases achieving the objective of the strategy requires greater co-ordination between departments. For example “Accelerating industrialisation by developing world class and globally competitive industrial infrastructure” requires the SIR/ IA internal infrastructure creation to be matched with connecting road, rail, airport and port infrastructure. As also the development of townships, educational and health services etc. Focussing on monitoring and achieving the theme objectives is essential for ensuring co-ordinated development.

4. SECURING THE FUTURE ENERGY NEEDS OF GUJARAT'S GROWING ECONOMY

Gujarat has recorded significant economic growth over the past decade. Going forward the State is planning huge investments so as to generate a much larger economic momentum. Plans supporting the surge in economic development include setting-up of special investment regions and industrial areas in the Delhi-Mumbai Industrial Corridor, creating logistics hubs along the dedicated freight corridor, improving connectivity across the State through road, rail and airport network. Increasing port capacity to handle cargos both from Gujarat and northern hinterland, urbanisation and development of new townships etc. All these programmes would only be possible if supported with the availability of energy.

The challenges to meeting the energy needs of the State's growing economy are as follows:-

i) Significant growth in power consumption. The energy units required to meet the above plans would be 147,055 million units by 2020 i.e. nearly 2.5 times the existing units generated. The challenge for meeting the power needs is further enlarged by the need to secure the fuels for power generation, be it coal, lignite or oil and gas. Most of which needs to be imported from outside the State. In addition the State has a large potential for setting up renewable generation through wind and solar power. This needs the right policy encouragement for the investments to happen.

ii) Gas is another source of energy that is critical for meeting the growth aspirations of the State. Expansion in existing demand as also switching demand from liquid fuels and new demand from power plants and industrial units is expected to be powered by natural gas. In addition recognising the convenience and pollution free character of gas for households, the State plans to provide natural gas to 200 towns. This would require the State to substantially augment its natural gas sources as well as transportation and distribution network.

A total investment of Rs. 348,620 crores is estimated to be made in the period 2009 to 2020. The challenges for successfully attracting these investments are many and would require to be dealt with centrally.

4.1 Power Sector – Generation, Transmission and Distribution

Gujarat has recorded significant economic growth over the past decade. Going forward the State is planning huge investments so as to generate a much larger economic momentum. Plans supporting the surge in economic development include setting-up of special investment regions and industrial areas in the Delhi-Mumbai Industrial Corridor, creating logistics hubs along the dedicated freight corridor, improving connectivity across the State through road, rail and airport network, Increasing port capacity to handle cargos both from Gujarat and northern hinterland, urbanisation and development of new townships etc. All these programmes would only be possible if supported with the availability of energy.

The assured availability of power at competitive tariffs can help in positioning Gujarat as a competitive destination for industries while providing a good quality of life for its citizens. This will also lead the revival and development of rural industries and build rural economies there by reducing migration of citizens from rural areas to urban areas for employment.

The vision:

To achieve UMI[4] countries per capita power generation and consumption benchmarks while building large capacities in renewable energy and providing quality energy at competitive tariffs.

Demand for energy in the State has grown at a rapid pace, driven by high industrial growth rates and rapid urbanisation. Demand projections for the current study have been made, using the bottom-up approach. Expected growth rate for each segment of a demand category has been assumed over the period of the study. This has been based on an analysis of the last five-year data and adjustment for known factors. Transmission and distribution (T&D) losses have been considered at a loss reduction of 1% annually from 2007-08 loss level of 26%. Energy demand for the State is expected to increase from 62,603 MUs in 2009-10 to 1, 47,055 MUs in year 2019-20. The peak demand for the State is expected to be 10,209 MW in 2009-10 and 23,982 MW in 2019-20.

To meet the projected demand Gujarat is expecting to add approximately 11,690 MW from conventional sources of energy during the 11th Plan period. Additionally, Gujarat will get 1,100 MW (800MW before 2012) from the Ultra Mega Power Project being set up at Mundra and 5,800 MW from other projects planned beyond the 11th Five-Year Plan. Renewable sources comprising of wind power and biomass are estimated to add another 3600 MW during the period up to 2020. Given the evolving scenario in Nuclear power generation, no capacity additions have been considered. A total of 22,190 MW are planned to be added by 2020.

It is expected that the average demand deficit in Gujarat would be eliminated by 2009-10. The State is expected to be surplus both in energy and peak demand from 2011-12 onwards. The table below presents a summary of the proposed shelf of projects. The total investment in the State for capacity additions, both in generation as well as transmission and distribution, would be in the range of Rs. 1, 51,735 crores.

The fuel mix of the capacity additions and the investments required is presented in Exhibits 3.1 & 3.2. Coal continues to be the dominant source of fuel, with an increasing component being imported coal. The proportion of renewable sources of energy is projected to grow to 11%, whereas the share of Hydro and Gas/ LNG is expected to drop by 2020.

[4] Upper Middle Income Countries

Exhibit 4-1 : Fuel Mix of Capacity Additions till 2020

Fuel Mix (MW)	At the end of 2007	%	Addition 2008-2020	%	At the end of 2020	%
Coal	4829	51%	13393	60%	18222	58%
Lignite	715	8%	2325	10%	3040	10%
Hydro	779	8%	0	0%	779	2%
Gas/Naptha/FO	2610	27%	2872	13%	5482	17%
Nuclear	559	6%	0	0%	559	2%
Non Conventional			3600	16%	3600	11%
Total	**9492**	**100%**	**22190**	**100%**	**31682**	**100%**

Source: CRISIL analysis

Exhibit 4-2: Sector-wise & fuel mix-wise Investment Pattern (Rs Crs.)

Sector wise /Fuel wise - Investment (Rs Crs)	Coal	Lignite	Gas	Renewable Energy Sources	Investment in Generation	T&D Sector	Total Investment
Central Sector Projects	Investment of central sector generating stations and that of PGCIL has been excluded from the sector wise investment pattern analysis						
State Sector	26055	8669	5646		40370	28670	69040
IPPs/Private Sector	34950	2375	2970	40400	80695	2000	82695
VGGIS'09 MOUs				73519			
Total Investment	**61005**	**11044**	**8616**	**113,919**	**121065**	**30670**	**225,254**

Source: CRISIL analysis

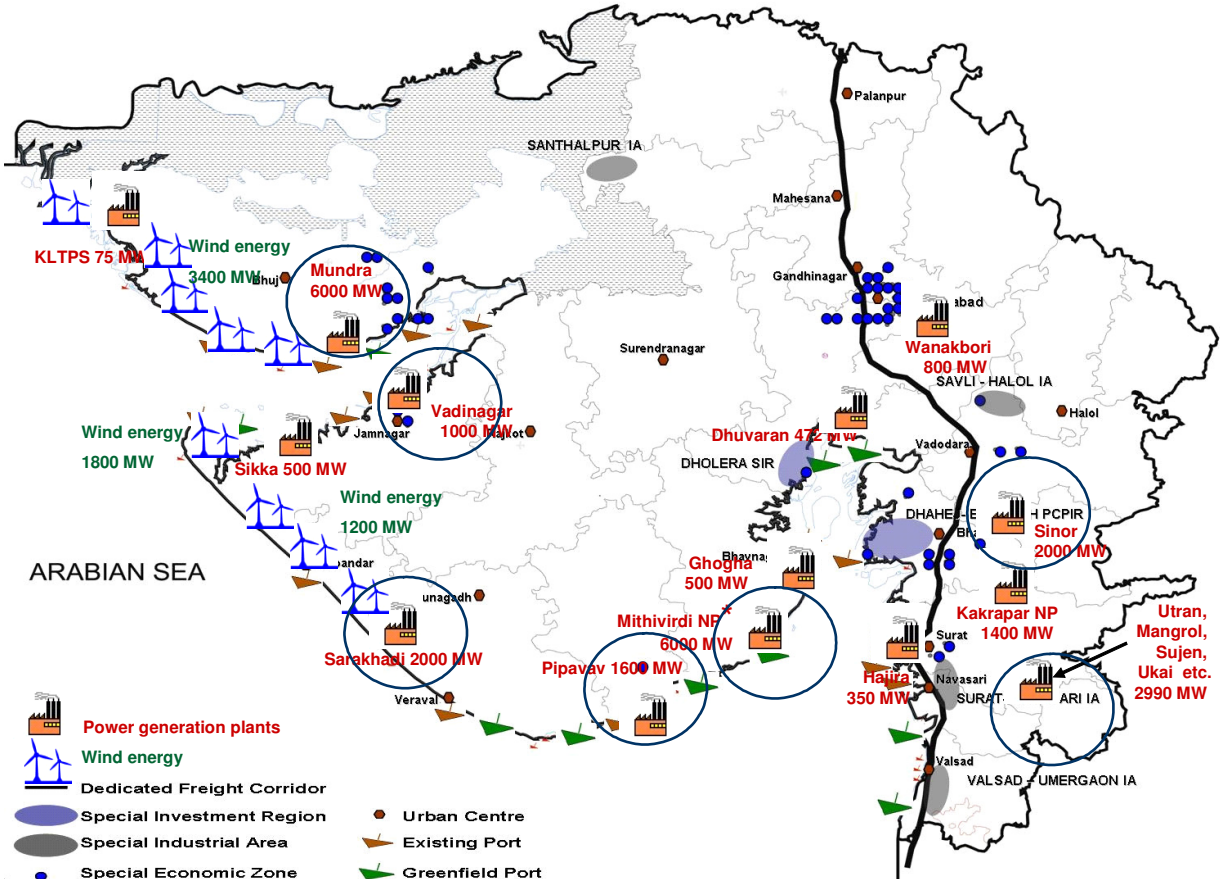
Key sector issues:

Sector issues that will drive sector growth and investments are 1) a reduction of cross subsidy and tariff rationalization especially with respect to industrial and commercial consumers, 2) demand side

management and the flattening of the load curve 3) capacity addition through renewable sources of energy. A substantial potential exists for Solar and wind energy. The right policy environment will be needed to encourage investments, 4) A substantial addition of generation capacity, based on imported coal, would require the strengthening of linkages for receiving imported coal 5) Given that the State is likely to experience a power surplus situation from 2011-12, it would be desirable for GUVNL to build capabilities in power trading.6) Accelerated use of Lignite reserves could be considered for creating an additional capacity of 2000 MW

Equity investments in the State sector, for T&D as well as generation, will need to be mobilised either through tariff increases, direct funding by the State or by encouraging JV s with the private sector.

Exhibit 4-3: A map of Gujarat depicting the location of investments in generation plants



Flagship projects in the power sector are – 4000 MW Mundra Ultra Mega Power Plant, 2640 MW Mundra Thermal Power Plant, 2000 MW Sarakhadi and Sinor Thermal Power Plants, 900 MW Pipavav coal based power plant, 990 MW Sugen gas based power plant, Nuclear power plant at Mitivirdi etc.

Substantial additions in generation capacity will be made through harnessing of renewable energy sources like wind, solar and geo thermal.

A detailed sector write-up is included in Volume II.

4.2 Oil & Gas Sector – Making preferred fuel

Gas is another source of energy that is critical for meeting the growth aspirations of the State. Gujarat is by far the most developed gas market in the country. It is the landfall point from where gas is transported and sold to the Northern and Western parts of the country. It is also one of the oldest oil & gas producing States in the country with Ankleshwar and Mehsana being among the early gas discoveries in the country.

Expansion in existing demand as also switching demand from liquid fuels and new demand from power plants and industrial units is expected to be powered by natural gas. In addition recognising the convenience and pollution free character of gas for households, the State plans to provide natural gas to 200 towns. This would require the State to substantially augment its natural gas sources as well as transportation and distribution network.

The vision:

To make gas the preferred fuel of choice across the ever expanding urban, industrial and transport landscape of Gujarat and double the per capita consumption to reach UMI levels and exceed the world average.

Despite the increased prices of natural gas and LNG, the demand for gas is expected to substantially increase in the coming years. Drivers for demand growth are the energy needs of a growing economy, growth of end-user segments, affordability vis-à-vis liquid fuels, introduction of regulation and continuing environmental concerns. Demand for gas in the State is projected to come from growth in existing demand, switching demand from liquid fuels to gas and from new capacity additions such as addition of around 5600 MW of gas based generating capacity. Gas demand in Gujarat is likely to grow at 6.4% CAGR from 70 mmscmd in 2009 to 146 mmscmd by 2020.

Gujarat currently has the most developed pipeline network in the country and is the only State where gas pipeline network is being operated by more than one player i.e. GAIL (India) Limited, Gujarat State Petronet Limited and Gujarat Gas Company Limited.

Supply is expected to grow from 47 mmscmd in 2009 to 101 mmscmd by 2020. The supply mix is expected to change with supply from ONGC declining and increasing supplies from new sources such as the Reliance KG Basin, new and expansion of LNG terminals, the GSPC KG Basin, coal bed methane and new finds. Growth is anchored on securing additional gas supplies as per projections and augmentation of trunk pipeline and city gas infrastructure in various cities of the State. A deficit in the range of 23-45 mmscmd is projected throughout the period. The investment in the shelf of projects shown below is based on these. The growth strategies being pursued to ensure gas is available to consumers across the state are as follows:

- Securing gas supplies
- Creation of gas pipeline and city gas infrastructure in various cities in the State

- Establish Gujarat as a leader in the area of research related to gas & petroleum

The investment envisaged till 2020 in the Natural Gas & LNG sector is estimated to be Rs. 1,23,366 Crores which includes investment worth Rs 6,916 crores proposed by investors during Vibrant Gujarat Global Investors' Summit 2009.

Exhibit 4-4: Project Shelf till 2020

Particulars	(Rs. Crore)
LNG terminal expansion (PLL & Shell)	900
LNG terminal at Mundra	7,400
New Terminals – GSPC	6,500
City Gas Distribution (including CNG station)	9,900
Bulk Transmission Pipelines	6,230
Coal Bed Methane Network	520
Exploration (E&P)	10,806
Development (E&P)	13,494
27 MMTPA Refinery at Bhavnagar	60,000
Submersible Rig Manufacturing Facility	700
Total	**1,16,450**
MOUs signed under Vibrant Gujarat Global Investor's Summit 2009 (New projects proposed by investors)	6,916
Total investments	**1,23,366**

Source: CRISIL analysis

GSPC in collaboration with private investors plans to set-up a 27 MMTPA refinery to cater to the export market and make Gujarat the petroleum product export hub of India. The said refinery is likely to be commissioned by FY2015 timeframe and majority of the investment is likely to take place beyond FY2012. The total cost of the refinery is expected to be around Rs.60, 000 Crores. A map of Gujarat depicting the investments in LNG terminal, gas grids refinery is location-wise is presented in exhibit below.

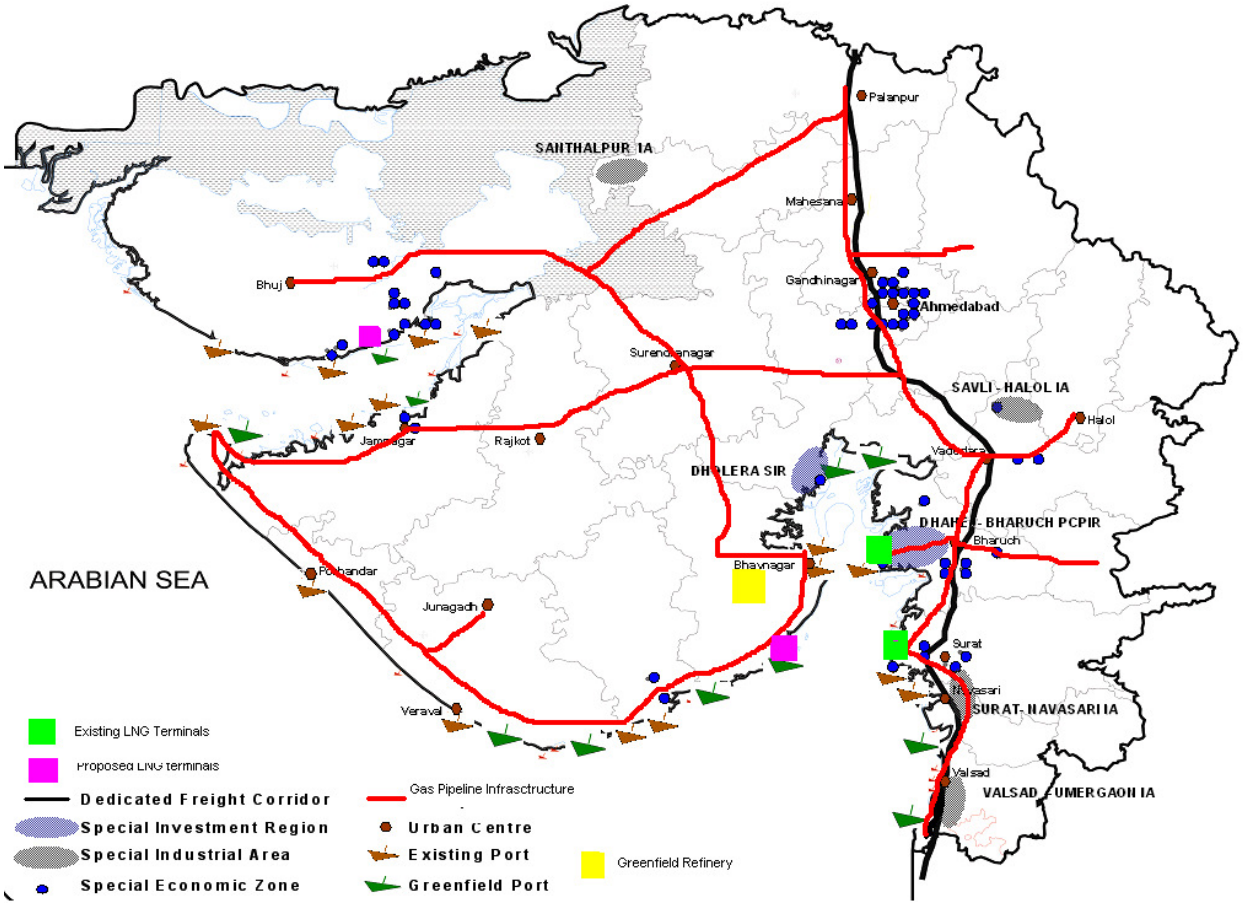
Key sector issues:

The most important issue pertains to the new regulations under which the existing pipelines need the regulator's authorisation and any expansion of pipelines/ gas grids would require the regulator's approval. The Government will need to take this matter up with the regulator, to continue its plans for the gas grid. Need for skilled manpower for pipeline laying, operation & maintenance will be large given the scale of projects planned. Government already has taken the lead in setting up an Institute of Petroleum Technology at Gandhinagar. New training institutes and many more agencies will be required for taking up the pipeline laying activity.

New technology Initiatives in the gas sector includes gasification of underground coal mines. Gujarat has already taken the lead and has three coal gasification projects under implementation.

A detailed sector writeup is included in Volume II.

Exhibit 4-5: Map of Gujarat showing investments in LNG terminal and gas grid refineries



Flagship projects in the gas sector are - Setting up of LNG terminals at Mundra and Pipavav, Expansion of LNG terminal at Hazira, Setting up the second phase of the Gas grid, City gas distribution networks for over 200 cities etc. In addition, extensive exploration and production activities will be taken up to secure gas supplies.

5. MAXIMISING THE GROWTH IMPETUS FOR GUJARAT FROM THE DFC/DMIC OPPORTUNITY

Government of India plans to develop a Multi-modal High Axle Load Dedicated Freight Corridor (DFC) between Delhi & Mumbai covering an overall length of 1483 km. GOI further proposes to establish a "Delhi Mumbai Industrial Corridor" (DMIC) along the alignment of DFC between Delhi and Mumbai. The objective of DMIC is to promote the economic development of the region through the creation of a long term enabling environment. The project influence area for DMIC extending up to 150 kms on both sides of the DFC alignment presents an enormous opportunity for Gujarat. Some of the positive features for Gujarat are; 38% of the DFC passes through Gujarat. Four of the nine junctions planned as interchange stations with the existing rail network are in Gujarat. Industries in Gujarat can access the DFC at several locations along the corridor. Nearly 60% of the containerised cargo originates in the North West hinterland. While the bulk of this is captured by JNPT today, it is an opportunity for Gujarat's container terminals to increase their share. More than 70% of the traffic on the DFC is expected to be feeder traffic. Industries and ports can leverage on this opportunity for feeder traffic. The project influence area (DMIC) covers nearly 62% of the area of the State, providing an opportunity for creating an economic area that provides a globally competitive environment for manufacturing and services industries.

Growth rate of Industry in Gujarat has been impressive. Since 2002-03 it has consistently been in the double digit and higher that the all India growth rate. Share of Industry in Gujarat's State Domestic Product has also been high at greater than one third. The State has consistently pursued investor friendly policies and created a favourable environment for attracting investments to Gujarat. Five major industries that contribute to more than 80% of the industrial output in the State are: Petroleum Products, Chemicals & Pharmaceuticals, Textiles & Apparel, Food Processing and Engineering. If the industrial growth in the State continues at 12.5% till 2015 and 10% thereafter till 2020 the State is expected to achieve an Industrial output of Rs 368,000 crores which is nearly 5.5 times the current level. This level of output is expected to generate direct employment in the organised sector to the tune of 30 lakhs up from the current level of 8.3 lakhs. However, this would require creation of basic infrastructure along with energy and transportation linkages. DFC/DMIC offers an opportunity for Gujarat to leverage on its strengths and achieve the objectives of industrial growth and employment. At the same time sustainable growth will only be possible through total environmental management.

While leveraging the developmental potential of DFC/DMIC opportunity, Government of Gujarat is nurturing vision to nurture industrial development of Gujarat by provision of best industrial infrastructure, high speed connectivity, logistics parks and lot more. The vision for industrial development in state is -

The vision:

To accelerate industrialisation through world class and globally competitive industrial infrastructure that will lead Gujarat's foray into the high technology/ high value added industries and services space.

Gujarat Infrastructure Agenda BIG 2020 recognises this opportunity and has developed plans for creating world class infrastructure in the special investment regions, industrial areas and SEZs. It has gone further to plan for excellent road, rail and air connectivity to/from these economic hubs to the DFC, ports and urban areas. Hazardous waste management and controlling of land, water and air pollution is an important part of the Agenda. A total investment of Rs. 231,348 crores has been planned comprising of the following:

Exhibit 5-1 Investment proposed to leverage DFC/DMIC potential

Sector	Investment Rs. crores
SIR Dholera	108,520
Industrial Nodes & SEZs in DMIC area	30,953
Road Connectivity	25,183
Rail Connectivity	5,278
Greenfield International Airport	3,000
Logistics hub	4795
Power	27,971
Urban Infrastructure including metro	20,623
Hospitality & Recreation	5,025
Total	**231,348**

This does not include the investments that will be required for setting up individual industries and service facilities. Investments in SIR Dholera include MOUs of Rs.100,000 crs. The details of which, are currently not available.

5.1 Special Investment Regions, Industrial Areas, SEZ Infrastructure

A summary of the shelf of projects is presented below; Chapter 3 of Volume II covers this in greater detail:

1. Petroleum Chemical and Petrochemical Investment region (PCPIR) to be developed as a part of Delhi-Mumbai Industrial Corridor at Dahej. The region is expected to attract sector specific investments in petroleum products and chemicals sectors.

2. Special Investment region (SIR) proposed to be developed at Dholera. A multi-product industrial infrastructure is planned to be developed.

3. GIDC plans to create new estates or expand existing estates which can host upcoming industrial units.

4. The state has 53 special economic zones in various stages of development. 39 SEZs out of 53 SEZs planned would cater to industries sector while 13 SEZs would cater to IT/ITeS sector and 1 SEZ is multi-services SEZ. The SEZ projects will create supply of developed industrial land.

5. There are about 21 private Industrial parks which are approved and being developed.

6. Large multi-product industrial estates at Halol - Savli and at Santhalpur are planned as part of Delhi Mumbai Industrial corridor phase I development.

7. Delhi Mumbai Industrial Corridor phase II would entail development of two industrial areas of Hazira (Surat- Navsari) and Kalgram-Maroli (Valsad-Umbergaon).

Feasibility studies and detailed project reports preparation are currently in process for many of the shelf projects. The goals for the sector include:

- To sustain industrial growth through efficient industrial infrastructure
- Create a business friendly environment to realise investments in DMIC/ SEZs
- Ensure growth with a human face and in an environmentally friendly manner

The acquisition and management of large quantities of land is critical to the success of the above plans. Our estimates indicate that in the short term, for the projects proposed under Vibrant Gujarat 2007, land availability is unlikely to be a problem. However location specific mismatch could be a possible as most projects are bunched in the four districts of Ahmedabad, Bharuch, Kachchh and Surat. Availability of land for projects upto 2020 would require to be addressed. The Government is seized of the importance of this issue and has initiated actions to meet the requirement in a timely manner. The total funding requirement and the split up between GoG funding and PPP are given below:

Exhibit 5-2: Estimated funding requirement to fund internal infrastructure creation for existing shelf of projects (Rs Cr.)

Fund requirement (Rs Cr)	Funding mode			
Project	GoG	PPP	VGF	Total
SIR Dholera	890	107,238	392	108,520

Industrial Nodes & SEZ in DMIC other than SIR Dholera	2558	27,992	403	30,953
Industrial Parks & SEZ outside DMIC	500	18,468	-	18,968
Grand Total	**3948**	**153,698**	**795**	**158,441**

Source: CRISIL analysis

Bulk of the investments for the creation of infrastructure for Special Investment Regions, Industrial Areas and SEZs has to come from the private sector. Adequate preparatory work for the development of projects will be critical for the success of PPP. The Government of Gujarat has proposed the following three tier institutional arrangement to facilitate the implementation in the DMIC:

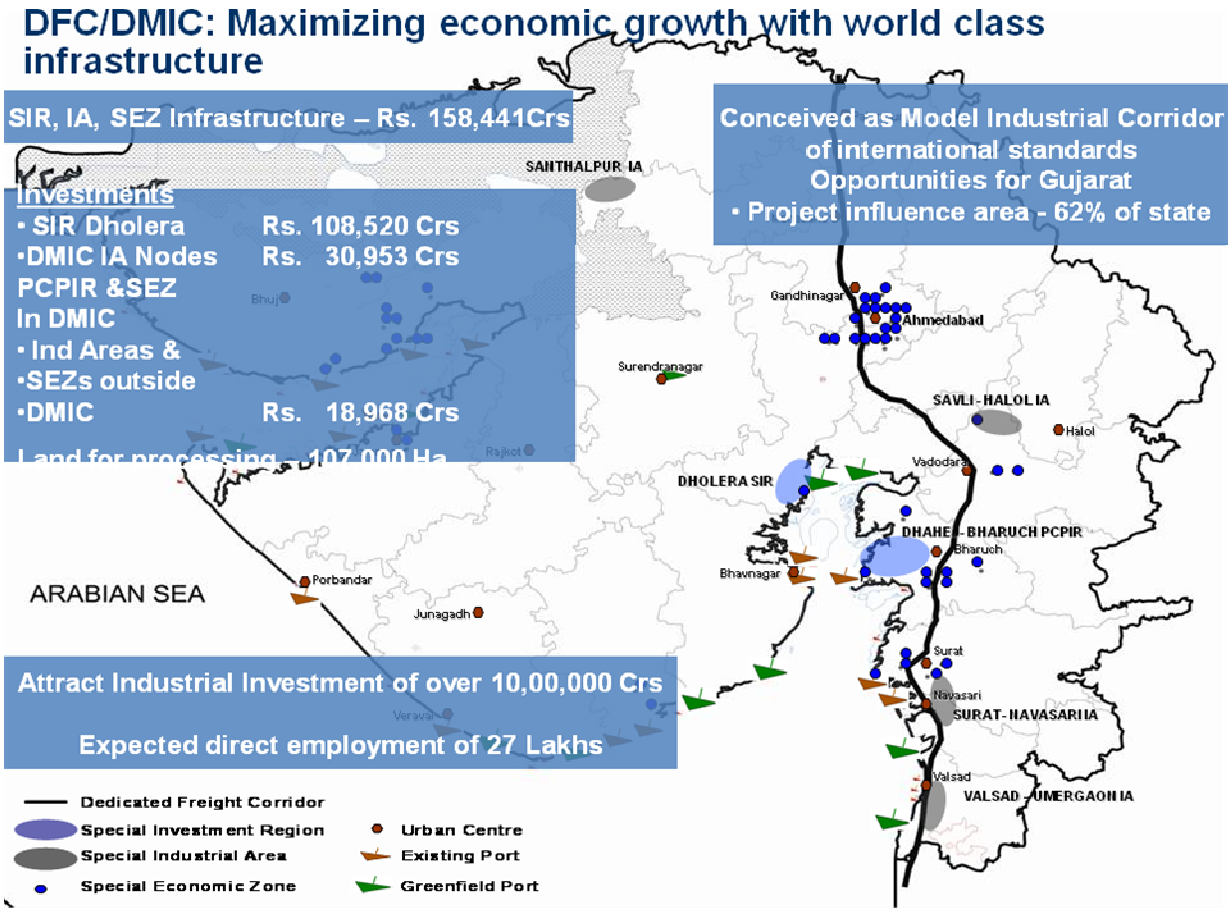
1. GIDB to serve as the apex body for the implementation of DMIC projects.

2. Gujarat Industrial Corridor Corporation (GICC) to take up project development work for major projects in the corridor.

3. Area Development Authorities to be formed for the development of the Special Industrial regions under the SIR Act.

Exhibit below shows the map of Gujarat with the locations of SIR, Industrial areas and Special Economic Zones

Exhibit 5-3: Map of Gujarat with the locations of SIR, Industrial areas and Special Economic Zones



A detailed writeup is included in Volume II.

5.2 Road connectivity to SIR, IA, SEZs

Bulk of the activity in the SIR, IA, and SEZs is expected to be manufacturing / export oriented. Potential industries that could be located here include Automobiles (including components and parts), Chemicals and Petrochemicals, Heavy/ Light engineering, Textiles, Agro and Food processing, Pharmaceuticals, Gems & Jewellery etc. Good connectivity, both road and rail, between these centres and the ports and DFC will be critical for their success.

The proposed DFC/DMIC projects for road connectivity are as follows:

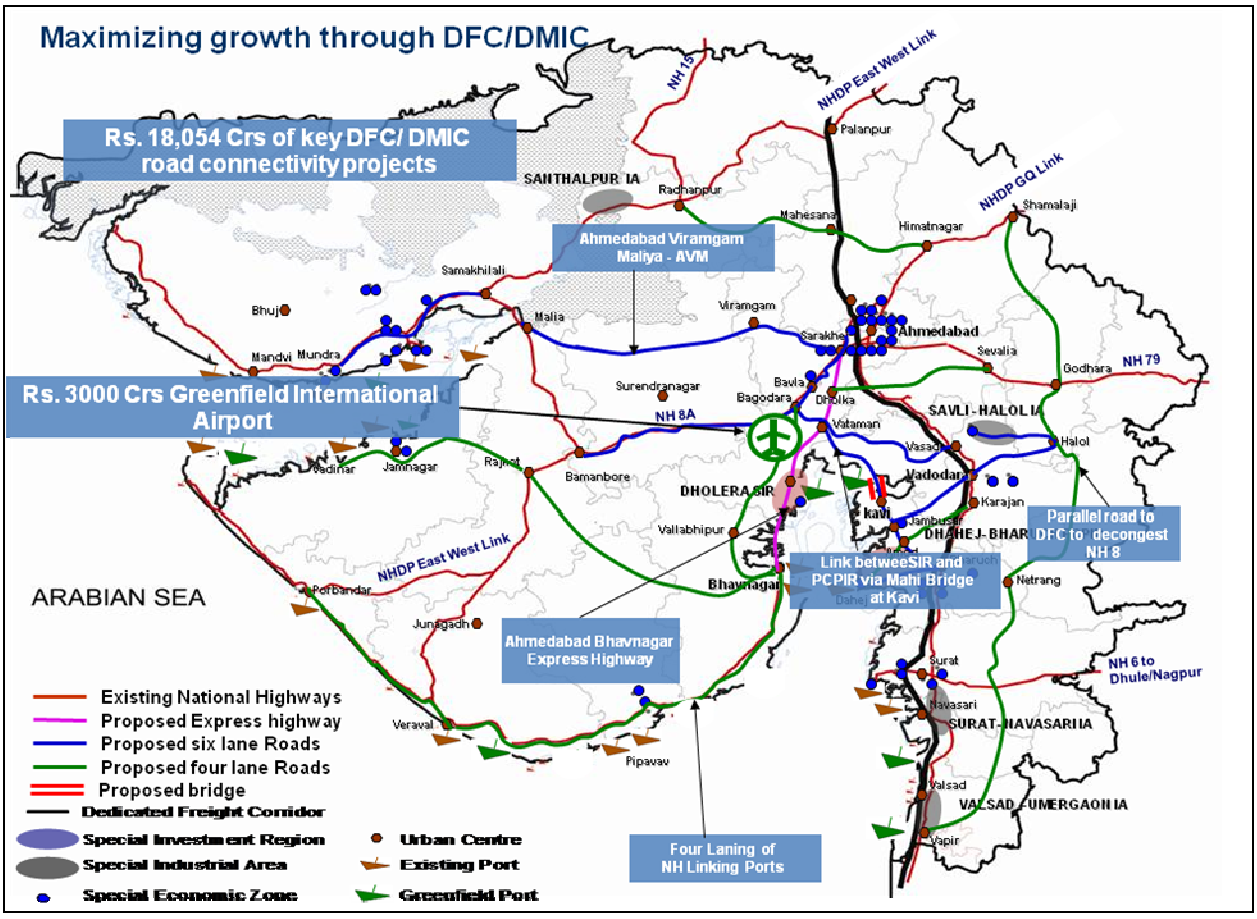
- GIDB/ GMB have proposed high speed connectivity of ports and industrial areas to DFC/DMIC by developing road network along existing alignments. The projects comprise 2040 km of the roads. Modifications are suggested in some of the project proposals and these projects are listed under the Roads sector report in Volume II.

- Beyond the projects suggested by GIDB/GMB, some new projects have been identified to supplement the DFC/DMIC, port and industrial area connectivity. These projects will add to the SHDP and DFC/DMIC connectivity projects in having a high impact on the connectivity and economy of the state. These comprise 1313 km of roads. These projects along with its rationale are listed under the Roads sector report in Volume II.

The DFC/DMIC comprises development of total 3353 km of roads at a total investment of Rs 25184 crore by 2020. Around 2450 km length of the road will be widened to 4 lanes and remaining 903 km length of roads will be widened to 6 lanes. A pictorial representation of these roads is exhibited in following figure. The sector issues that need to be dealt with and the action agenda are discussed under the Roads sector.

Exhibit below shows the map of Gujarat with the key Road and Airport connectivity for DFC/DMIC.

Exhibit 5-4: DFC/DMIC connectivity projects



Source: CRISIL analysis

A detailed writeup is included in Volume II.

5.3 Rail connectivity to SIR, IA, and SEZs

DFC/DMIC presents a big opportunity for Gujarat. The main driver for DFC is feeder traffic. Industries and ports in Gujarat can leverage this opportunity fully. The demand drivers for rail connectivity in Gujarat are the existing and Greenfield ports, industrial parks, SEZs and SIRs, cement and power plants, existing industrial estates and urban and tourism centres. Container traffic is expected to amount for 70-80% of DFC traffic. With three container ports in Gujarat and the fourth under implementation, the strengthening of feeder routes to DFC would help them compete with JNPT.

Two of the key rail sector goals are:

- To strengthen connectivity of Gujarat ports and industrial areas to DFC/ DMIC via compatible spur lines and through multimodal routes if required.
- Focus on multimodal transport projects that reduce total time and cost of movement across logistical chain such as Logistics Parks and Warehouses

The Project Shelf displays the components of projects to be undertaken under PPP/JV by the State as well as projects by Indian Railways. Projects proposed by GIDB/GMB mainly aim to provide better connectivity. These have been included with suitable modifications to ensure DFC connectivity. Such projects may be under various stages of approval with the Indian Railways. Some new railway proposals have been added under this study.

A total of 40 projects have been included in the shelf, aggregating to a total of Rs. 48694 crore. It should be noted that the above figure includes an investment of Rs. 32500 crore for the Bullet train project. The total investment in rail sector from rest of the projects is worked out to be Rs. 16194 crore by 2020. The summary of project shelf with exclusion of Bullet train investment is given below. The estimated investment in Rail projects for providing connectivity within DMIC is Rs. 5,278 crores.

Exhibit 5-5: Project Shelf Summary

Phase	PPP/JV Projects (Rs. Crore)	Indian Railway Projects (Rs. Crore)	Total (Rs. Crore)
2008-10	552	1541	2093
2010-12	1946	4317	6263
2012-17	2705	5133	7838
Total	**5203**	**10991**	**16194**

A detailed sector writeup is included in Volume II.

5.4 Greenfield International Ahmedabad Airport

Ahmedabad is major international airport in western India apart from the Mumbai airport. Ahmedabad airport has witnessed phenomenal air domestic and international passenger traffic growth surpassing all earlier projections and assumptions. It is also estimated that this trend will continue owing to the state's economic growth, though there may be a temporary dip in the short run due to the current slowdown in the aviation sector.

In this background, the demand and supply analysis for Ahmedabad Airport is performed. The outcome depicts that the airport will face capacity constraint by 2012-13 even taking into account present capacity expansion. Further expansion will be constrained owing to the non availability of land in the vicinity of present airport. This would require the development of new Greenfield project.

Project Proposal

The project involves all activities related to airside and city side infrastructure development. This includes land acquisitions, land development, passenger & cargo terminal, ATC, airfield lighting, fire station, electric substation, cargo facility, water treatment plant, car parking , hangers, cargo and passenger apron, taxiway, runway, administrative block ,isolation bay ,GSE storage and A.C plant, access internal roads, hotels and commercial development, night parking, basic repair and maintenance etc.

Detailed planning is required for development of above critical infrastructure facilities.

Investment

The cost of the project based has been derived based on cost incurred to the Greenfield airports of Hyderabad international airport and Bangalore international airport which have been developed at a cost of around Rs 2500 crore each. The investment has thus been estimated at Rs 3000 crore at 2008 prices.

Implementation methodology

The project can be developed through Public Private Partnership through the Develop, Finance, Operate and Transfer principle. Government can enter into concession agreement with an SPV formed to develop the project. The private sector player forming the SPV can be selected through a transparent bidding process. Government can provide support in terms of land acquisition and environment clearance and ensure adequate land availability. Their revenue stream would be generated through aeronautical and non aeronautical facility usage charges.

5.5 Logistics

Logistics is the process of planning, implementing, and controlling flow and storage of raw materials, in-process inventory, finished goods and related information from point of origin to point of consumption in a

time and cost effective manner[5]. It has vital role to play in enhancing competitiveness in all three sectors (agriculture, manufacturing and services) of the economy. The Indian logistic industry is estimated to be worth Rs.4 trillion and contributes 13% to the total GDP of the country, out of which transportation alone contributes 40%. Inventory costs account for approximately 24% of logistics costs, and order processing and administrative cost account for around 10%.

Logistics costs account for 15- 25% of the cost of the final product in India, which is significantly higher than the 7-9% in developed countries[6]. The relative inefficiencies in logistics in India can be attributed to inadequate infrastructure (both physical and technological), laborious paper based and manual processes and fragmented supply chains.

The existing and emerging manufacturing and port development in Gujarat including SIR, PCPIR, Industrial Areas, SEZs, GIDCs and other industrial parks, is set to see intense activity in the movement, storage, sorting and handling of goods. Such activity will be required to be supported by a large set of related infrastructure facilities and services in the form of facilities for efficient handling, warehouses and storages, cargo distribution and agglomeration centres and logistics parks, fleet operation services, cargo handling agencies etc. Such activities and services have the potential to generate large employment as also make industry competitive.

Logistics parks in Gujarat can be developed along existing DFC alignment which meets the following criteria:

- The point should be serving a change of mode. For instance, cargo that may be routed to ports/ other locations from different industrial region may arrive at the nearest DFC junction by road. This may include factory stuffed containers, bagged cargo or cargo for stuffing in containers. This cargo would require services such as ICD/CFS, storage, warehousing etc.

- The point could be serving as an agglomeration or distribution point. While international logistics parks such as Jebel Ali or Frankfurt are designed as Distribution Parks, in India the reverse could happen in terms of agglomeration points where cargo converges.

- Change of mode may be associated with the need to add basic value through basic fabrication, packaging etc. Such value addition is normally required since previous mode of transport is often taken up in a manner which helps transportation. For instance, Reebok imports nearly finished shoes in large volumes packed together at its Maasvalkte Distripark in Port of Rotterdam. These shoes are then packaged and distributed throughout Europe. Nike saves on transportation cost through this method.

Based on the above, preliminarily indications are for creation of logistics parks at the following points that serve the planned investment regions/industrial areas.

[5] As defined by CII.

[6] KPMG skill gaps study in Indian logistic centres.

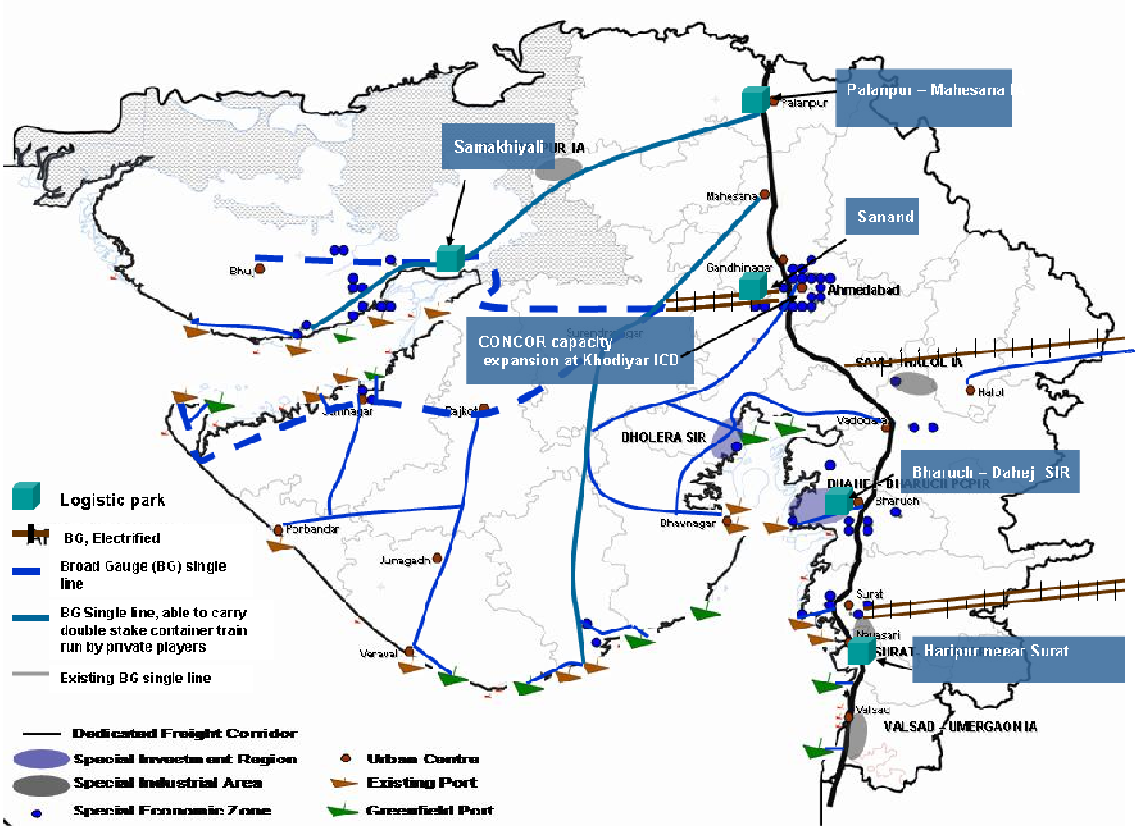
Exhibit 5-6: Indicative Location and Sizing of Logistics Parks

No	Project name	Location	Investment (Rs crores)
1	Large size multimodal logistic park	Palanpur- Mehsana	1064
2	Large size multimodal logistic park	Virochan nagar in Sanand	1000
3	Medium size multimodal logistic park	Samakhiyali	600
4	Medium size multimodal logistic park	Bharuch-Dahej	819
5	Medium size multimodal logistic park	Haripura near Surat	525
6	Logistic Park	Khodiyar Near Ahmedabad	100
7	Small size multimodal logistic park	Rajkot	140
	Total		**4248**

Source: CRISIL analysis

The detailed scope of services that could be planned for each logistics park would depend on the nature of cargo, volumes, and OD of the cargo. These will need to be worked out based on detailed feasibility studies. The cost of these logistics parks is worked out based on broad construction and land acquisition costs. It may be emphasised that these are only indicative costs at this stage and actual costs may work out based on detailed studies.

Exhibit 5-7: Locations of the Logistics Parks along the DFC/DMIC



5.6 Sustainable gorwth through total Environment Management

Total Environmental Management is a systematic approach to minimizing the damage created by an organization to the environment in which it operates. Environmental management involves reducing pollution, waste, and the consumption of natural resources by implementing an environmental action plan.

Government of Gujarat's initiatives on environmental management are not restricted to this section. For example emphasis on Renewable energy, propagating extensive use of natural gas across the State, implementing municipal solid waste management systems are all part of the total environmental management agenda but are covered in their respective sectors. This section mainly deals with plans for investments in hazardous waste management systems, common effluent treatment plants and other projects. The Vision is to achieve sustainable development of industries in Gujarat through conservation of resources and cleaner technologies with emphasis on total environment management. Apart from identified project under BIG 2020, several projects has been proposed by the private investors during Vibrant Gijarat Global Investor's Summit '09 (VGGIS'09). The summary of the projects and the investment required are shown as under.

Exhibit 5-8: Funding required for the shelf

Sum of Fund requirement (Rs Cr)	Timeline		
Project	**2,012**	**2,020**	**Grand Total**
Augmentation of CETP capacity	500	750	1,250
Conveyance pipelines	300	500	800
Creation common TSDF for hazardous waste	600		600
E-waste disposal facility	30		30
E-waste recycling facility	200		200
Incineration facility	125		125
Rain-water harvesting initiatives	200	300	500
Use of plasma technology for conversion of waste	250	500	750
Waste exchange centers	50		50
Waste information system	10		10
Waste to energy conversion facility	500	500	1,000
Waste to fuel facilities	100	150	250
Investment proposed during VGGIS'09			6,878
Grand Total	**2,865**	**2,700**	**12,443**

6. ENHANCING CONNECTIVITY TO CATALYSE DEVELOPMENT

Gujarat is well connected both internally and to the rest of the country by a good network of roads, railways and airports. It has the highest percentage of surfaced roads and large proportion of its roads is national highways. Gujarat also has a good network of broad gauge railway lines and has the highest number of operational airports in the country.

Good connectivity is critical for the economic development of the State. Gujarat's roads provide trunk as well as last mile connectivity to growth centers such as ports, industrial areas, urban areas, and tourism centers. These also facilitate perishables and agriculture produce to reach markets and rural and remote/ tribal areas to connect with mainstream economic and social activity.

The large number of airports in the state also presents an opportunity for enhancing connectivity for tourism as well a means for fast movement of agriculture produce. The key challenge will be ensuring multimodal all weather connectivity and using roads as a means of inclusion.

The Vision:

To develop seamless, efficient and high speed integrated transport networks conforming to global standards to usher in harmonious and inclusive economic development across Gujarat.

The key strategies and actions for development of road, rail amd air connectivity is summaries in this section.

6.1 Road infrastructure

Good road connectivity is critical for the economic development of the State. Roads provide the trunk as well as the last mile connectivity to the growth centres such as Ports, Industrial areas, urban areas, tourism centres etc. They provide access for the agriculture produce to reach markets and for rural and tribal areas to connect with mainstream economic and social activity.

Gujarat's road network of nearly 75,000 Kms. comprises of the National Highway, State Highways, major district roads, other district roads and village roads. Nearly one third of the National Highway is four laned. A high percentage of State highway is either two laned or four laned. Whereas the MDRs and ODRs are mostly single laned. Government of Gujarat has made impressive progress on several road development programmes namely the State Highway Development Programme, Gujarat Emergency Earthquake Rehabilitation Project, Pragati Path, Vikas Path, Kisan Path, World Bank assisted projects and PPP projects. In addition the Gujarat Highway Bill is an initiative to further facilitate the development of the road sector.

In the current report a 5,915 Kms. of arterial network of State Highway has been identified that provides connectivity to growth centres, DFC/DMIC, agriculture markets, rural and tribal areas, two or more important corridors, decongest national/State highways. Traffic estimates from the recently completed Strategic Options Study were used to assess demand on this arterial network from various user groups i.e. ports, industrial centres, urban and rural users, tourist traffic and agriculture products markets. Projects have been recommended for the shelf based on the review of existing programmes and projects on this core network and addition to the same where required so as to enhance connectivity. The project shelf mainly comprises of plans for up gradation/widening this network.

Important goals for the road sector in Gujarat are :

- Maximising the benefit from the DFC/DMIC through excellent connectivity to ports, industrial areas, cargo agglomeration and distribution points,
- High speed connectivity between all major urban, industrial, commercial, agricultural and rural centres including evacuation of cargo from Gujarat ports to its boundaries within 12 hrs.
- Ensuring all weather connectivity to all villages
- Attempting to meet international standards in terms of road design and road side development
- Ensuring highest safety and high riding quality.

The total project shelf emerging from the above road sector plans, programs and project proposals comprises a total of 46,702 km of road projects. Barring a couple of road projects like the Mumbai – Vadodara Express Highway, none are new alignments and are proposed for widening and strengthening.

The estimated cost of proposed road projects is described in the following exhibit. It may be mentioned that these are standard project costs, and the actual project cost will depend on the exact alignment, soil conditions, labour cost, technical standard of the road, etc., It may be noted that DFC/DMIC projects comprise 36% cost of total Rs. 73,443 crore of project shelf even though they constitute 11% of length of the total project shelf.

Exhibit 6-1: Investment Requirements (Rs crore)

Investments (Rs crore)	2008-10	2010-12	2012-17	2017-20	Total
SHDP GoG funded projects	318	2,187	0	0	2,505
SHDP BOT under VGF	22	305	0	0	327
SHDP Externally aided	0	1,926	0	0	1,926
DFC/DMIC Connectivity	9,130	7,425	5,279	4848	26,681

National Highway development plans	4,479	4,534	1,626	0	10,639
Growth centres connectivity projects	208	481	435	183	1,307
MDR/ODR	1,113	2,013	422	0	3,548
Non core SH Total	0	6,600	4,400	0	11,000
XIth Plan proposals	6,852	6,853	0	0	13,705
Road Over Bridges (38 No.) on PPP basis	0	760	0	0	760
Upgradation of SH connecting border towns and villages	133	912	0	0	1,045
Total	**22,254**	**33,995**	**12,162**	**5,031**	**73,443**

Source: CRISIL estimates based on compilation and standards

Sources of funds for the above projects are described in following exhibit.

Exhibit 6-2: Sources of funds

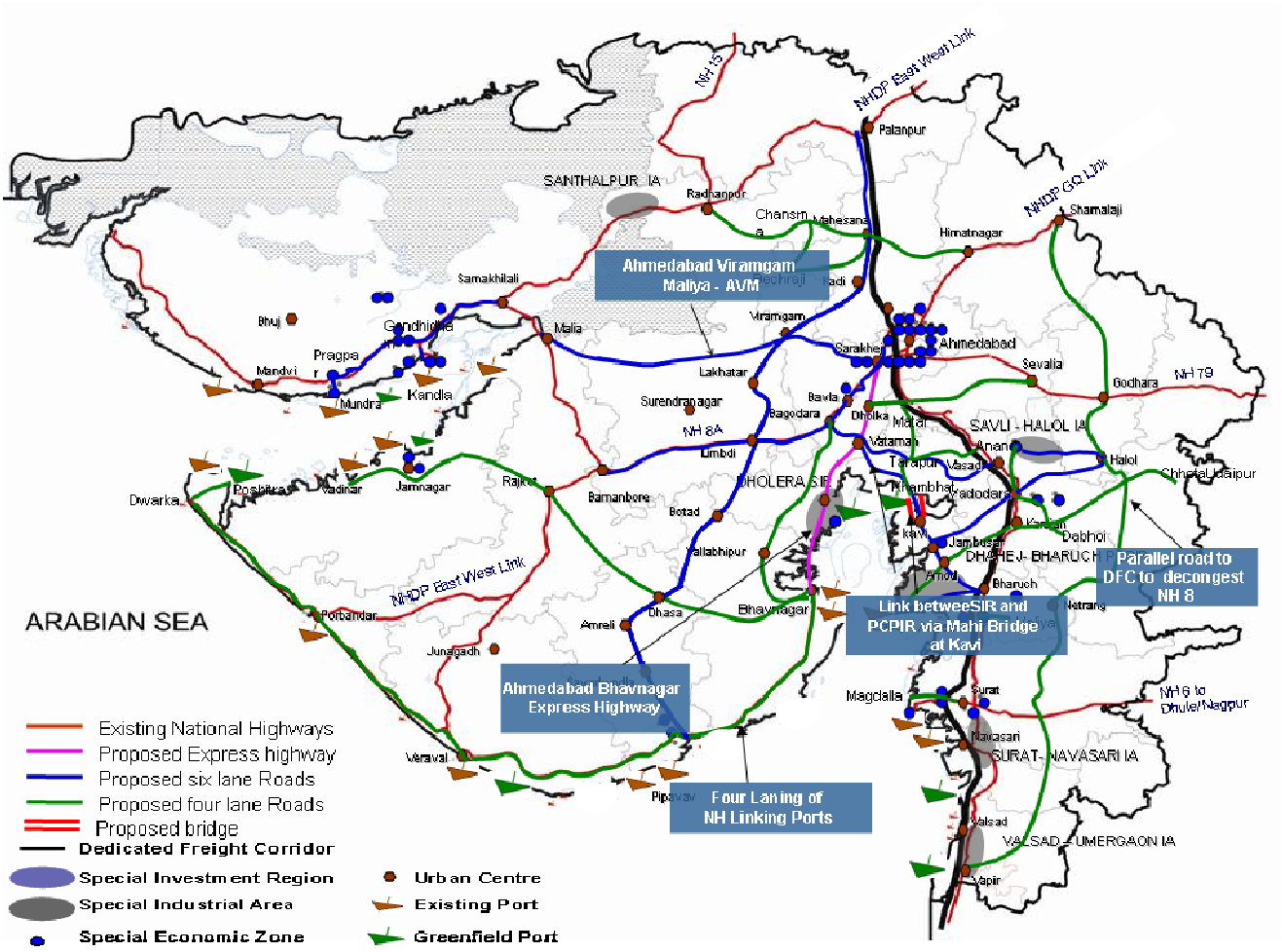
PPP (Rs. cr)	External/ Multilateral aided (Rs. crore)	State Government Budgetary support (Rs. cr.)	Central Government support (Rs. cr)	Total (Rs. cr)
39,110 (53%)	4,374 (6%)	25,180 (34%)	4,779 (7%)	73,443 (100%)

Source: CRISIL estimates.

PPP Project comprise of annuity based projects, BOT-VGF, DFC/DMIC and some growth centres connectivity projects .State Budgetary support comprise of noncore SH, 11th plan projects and Rs. 796 crores of growth centre connectivity projects.

It is apparent from the above exhibit that 54% of the project investment is to be funded through PPP while budgetary provision is required for 40% of the projects. DFC/DMIC projects constituting 33% of cost of project shelf is proposed to be funded mainly through PPP mainly due to roads with higher higher industrial traffic .However low toll able traffic on noncore SH and XIth plan projects may not be attractive through the PPP route and will require budgetary funding.

Exhibit 6-3: Map showing proposed road connectivity



6.1.1 Sector issues

The road project shelf is of the order of Rs. 74,000 crores. On comparing the magnitude of the Road Project shelf with R&B Budget of around Rs 1600 crore annually for capital projects, it is apparent that the key challenge for development of roads in the State is private sector participation and funding. A number of other challenges, such as land acquisition, departmental bandwidth could also constrain implementation.

There is a need for developing alternative sources to fund the annuity part of State highway development, creation of a dedicated road front to support PPP in road projects, introducing flexible project structuring, and introducing performance based maintenance contracts, inviting port and SEZ developers to participate in last mile linkage projects. Introduction of the Highway Bill to facilitate PPP and measures to enhance institutional capacity to undertake PPP projects will go a long way in ensuring the implementation of the road sector agenda.

A detailed sector writeup is included in Volume II.

6.2 Railway infrastructure

The evacuation and delivery of cargo and passengers by rail has a special significance for Gujarat since not only it serves as the gateway for the Northwest hinterland, but also because it will be needed to leverage the establishment of the Dedicated Freight Corridor. Besides, rail transportation is cheaper efficient and environment friendly mode of transport as compared to road transport, it is an essential long term input for growing economy.

The Dedicated Freight Corridor (DFC) and DMIC have the potential for reducing logistics cost thereby making Gujarat ports competitive. Thus there is need to plan for development of spurs and branch lines to DFC for uninterrupted, seamless connectivity between Gujarat ports and the hinterland. There is also a need to address requirements for cargo distribution, agglomeration, and unavoidable mode change through development of Logistic Parks and supporting services.

In sync with the connectivity infrastructure vision of enhancing connectivity to catalyse development, goals for railway sector in Gujarat is –

- To strengthen connectivity of Gujarat ports and industrial areas to DFC/ DMIC via compatible spur lines and through multimodal routes if required.
- Focus on multimodal transport projects that reduce total time and cost of movement across logistical chain such as Logistics Parks and Warehouses
- To create high quality efficient and fast passenger services on key routes and key railway stations
- To provide rail services on demand from all growth centres of the state

In total 54 railway projects have been identified aggregating to a total of Rs. 85,609 crore which comprises of projects identified by Indian Railways, Government of Gujarat and its agencies and new projects. The investment is arrived by including an investment of Rs. 66,300 crore from the Bullet train projects. Total investment in rail sector from rest of the projects is worked out to be Rs. 19,309 crore by 2020 net of the Bullet train project.

Exhibit 6-4 Investment proposed (Rs. Crores)

Phasing of investment	PPP/JV Projects	Indian Railway Projects	Total
2008-10	552	1,541	2,093
2010-12	1921	4,317	6,238
2012-17	39,645	37,633	77,278
Total	**42,118**	**43,491**	**85,609**

Source: CRISIL estimates.

To ensure that investments materialise, the State Government would need to take a series of measures such as Identify and prepare support projects for DFC/DMIC, Strengthen the office of the Director of Rail

Operations – Government of Gujarat, Take up or pursue IR to take up high visibility projects such as World class Railway Stations, Provide last mile linkage between upcoming and existing ports and DFC etc.

6.3 Airport infrastructure

Gujarat possesses one of the largest networks of airports and airfields in the country. It has 17 airports, including one international airport, under the operational jurisdiction of Airports Authority of India (AAI). All except three airports are operational and most run scheduled fights, through there are cyclical variations. Apart from AAI airports, there are three airstrips under State Government jurisdiction located at Mehsana, Amreli, and Mandvi.

There has been a high growth in air traffic in Gujarat, primarily arising from a low fare regime by Low Cost Airlines (LCA) supported by an economic boom. While this high growth may not sustain over a longer period, there is a need to examine and plan airport infrastructure in the State for long term growth scenarios, including addressing the requirement of greenfield airports at some locations. In addition, the state needs to explore opportunities in non-passenger segment viz. Maintenance, Repair and Overhaul (MRO) of aircrafts, air-cargo, creation of a regional hub for airline operations, aviation training and back office activities.

The goals articulated for the airport sector are –

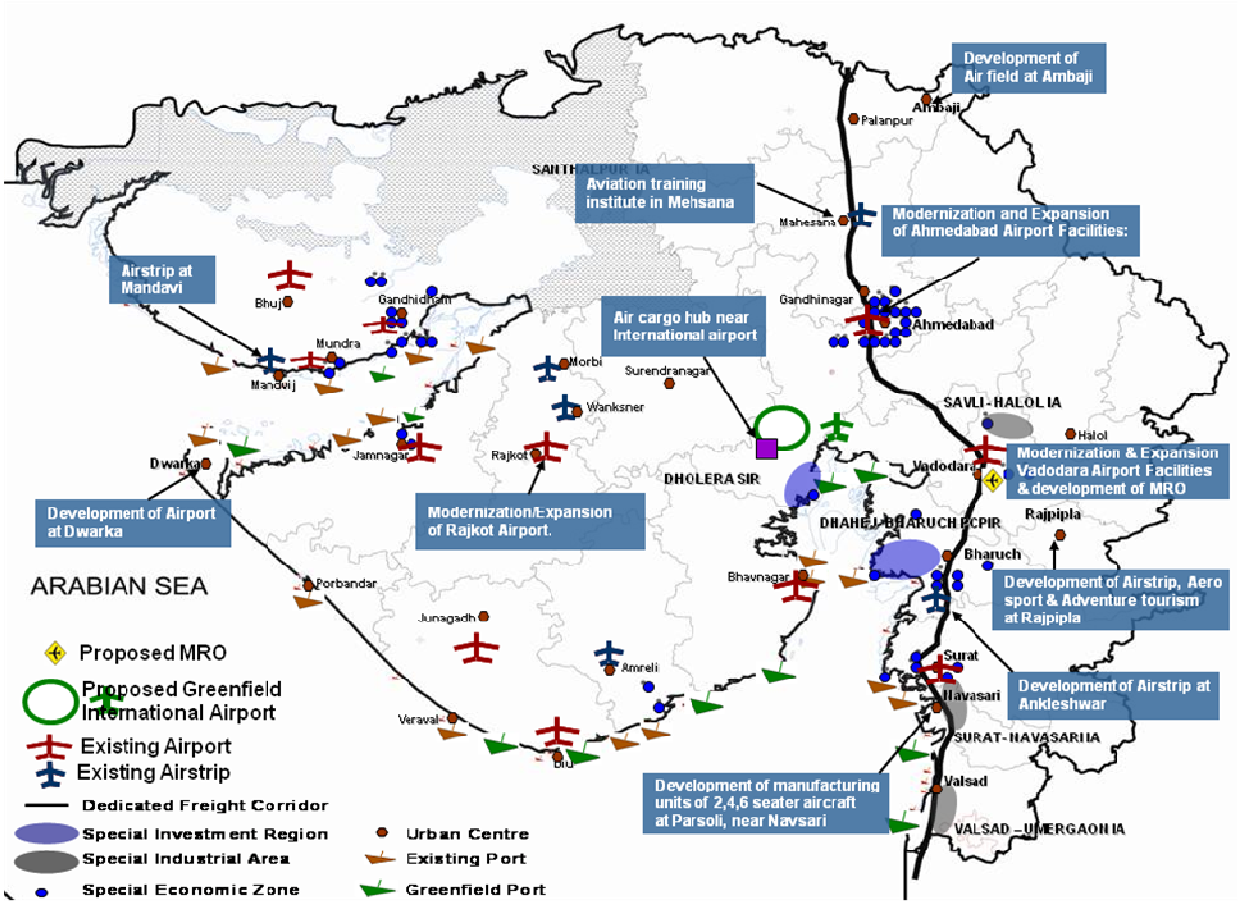
- Ensure availability of quality airport infrastructure and air connectivity to passengers in the State.
- Trigger development through the high visibility Ahmedabad Greenfield international airport project.
- Explore opportunities in non passenger aviation segments such as maintenance, repair and overhaul of aircrafts, air cargo, regional hub of airlines, air taxi services etc.
- Encourage manpower development and skill building in aviation sector by encouraging flight schools and aviation academies at not-in-use air fields.

Proposed investments for airport sector based on inputs from AAI's plan to develop 35 non-metro airports, MoUs signed during Vibrant Summits, relevant projects from the Aviation Master Plan, and gaps and opportunity emerging from the demand supply/opportunity assessment.

Investment worth Rs. 15,898 crores has been proposed. 69% of proposed private sector investment comprises development of International airport project at Ahmedabad, MRO at PCPIR/Vadodara and Air cargo hub at New International Airport. Most of the other investments are towards improvement of air side infrastructure at key existing airports, development of small airports and development of Air city residing manufacturing of aircraft industry. Modernization and improvement of airside development are proposed to be carried out by AAI while for all other projects Private sector participation has been envisaged.

The key challenge for the state Government is to channelize private sector investment and address the land issue on priority basis.

Exhibit 6-5: Project shelf at a glance



Source: CRISIL analysis

Flagship projects of the sector are –

- Expansion of existing Vadodara, Rajkot, Bhavnagar, Gandhidham airports
- Development of new airports at Surat, Ankleshwar, Ambaji, Dwarka and Mandvi
- Development of Maintenance, Repair and Overhaul (MRO) projects in South Gujarat.
- Setting up of warehouse and storage facilities for perishables for air cargo operations at various locations
- Air taxi and helicopter services connecting places of industrial, agriculture and tourist importance

7. PORTS TO PLAY A CENTRAL ROLE IN GUJARAT'S DEVELOPMENT

Gujarat with its 1600 kms of coastline is the waterfront for most of North and Central India. Its deep drafts, accessibility to Middle East and African markets and a facilitating policy regime has made the State the leading maritime state in the country. Ports have contributed hugely to Gujarat's industrial growth with nearly 70 percent of its imports being used within the state. Industries like petro chemicals, metal, cement, fertilizer and power have built their competitive edge from close proximity to ports for import of raw materials and/or export finished products after value addition.

Gujarat's port sector has substantially consolidated itself in the last decade and now is favourably poised to tap opportunities emerging from the DFC, DMIC, SEZs and SIRs. The demand for commodities handled at ports will go up by five and half times largely driven by crude oil, containers, LNG and coal. Opportunities also exist for the sector to scale up the operations of some existing ports to get into them in the league of the largest ports in the world.

The vision:

To become a major international player in sea freight logistics that delivers sustainable competitive advantage to its customers while playing a central role in Gujarat's economic development.

Ports in Gujarat including Kandla handle nearly 30% of the country's maritime cargos. Excluding Kandla, the share of Gujarat Ports was 140 MMTPA in 2007-08 representing 21% of the cargo handled by Indian Ports. Gujarat Ports can be broadly divided into (i) GMB Ports, (ii) Private and Joint Sector Ports (iii) non-commercial ports such as fisheries and (iv) ship recycling / ship building and repair yards. The GMB ports can be further divided into GMB owned and operated jetties (GMB jetties), GMB owned but privately operated jetties (Private jetties) and Captive jetties. The commercial ports comprise private sector ports (E.g. Pipavav) and joint sector ports (E.g. Mundra). Overall Gujarat's non–major ports comprise 11 intermediate and 29 minor ports.

It may be clarified that the general term, "Gujarat Ports" includes all ports on the Gujarat state coastline under state Government jurisdiction. Thus it does not include Kandla, Daman and Diu ports. The other term "GMB Ports" includes ports under direct operation and management of GMB as explained above.

Eleven key commodities formed 87% of the cargo handled by Gujarat Ports in 2006-07. These included Crude Oil and POL (48%), Cement Clinker (8%), Coal (8%), Containers (6%), LNG (5%), Iron Ore (4%), and Bauxite (4%). Other cargo including fertilizers, copper, salt, iron and steel contribute the balance 4% with the rest 13% being miscellaneous. Around 60% of India's petroleum cargo is handled by Gujarat. Demand assessment for the key commodities mentioned above, which constituted nearly 87% of the total cargo handled, has been carried out in this phase of the study. The revised demand was compared with the PODEG-Helicopter assessment study undertaken by GMB. Demand for commodities handled at

Gujarat Ports is projected to go up from 140 MMTPA in 2007-08 to 762 MMTPA in 2019-20. Major growth in demand is driven by crude oil (from 37 MMTPA to 162 MMTPA), Container traffic (from 16 MMTPA to 84 MMTPA), LNG (from 8 MMTPA to 24 MMTPA), and coal (from 12 MMTPA to 75 MMTPA). The share of crude cargo handled is projected to go up from 23% to 30%, while that of containers to increase from 11% to 16%. Port capacity is expected to marginally exceed demand by 2019-20. The demand of 762 MMTPA by 2020 includes an estimate of cargo arising from the proposed SIRs and Industrial Areas in the DMIC. The cargo in these proposed hubs is difficult to quantify and has been treated as a discontinuity in the estimate.

The project shelf developed for the Port sector in the vision period leading upto 2020 is presented in this section. The projects which are suggested by GMB for the last mile rail – road connectivity to the ports are incorporated in the project shelves of their respective sectors. The investments are mainly for Greenfield port development, expansion & up gradation of port infrastructure, terminal development, sbm/spm development. Attention needs to be paid to the development of coastal shipping, development of value added services at the ports. Ports would require the development of cities/ towns for encouraging the location of these value added services.

Exhibit 7-1: Summary of project shelf for Ports in Gujarat

	2008-10	2010-12	2012-17	2017-20	Total
Number of Project	24	79	30	13	**146**
Incremental Capacity (MMTPA)	96	187	263	185	**731**
Investments (Rs crore)	9,562	43,989	42,230	24,176	**119,957**
Region wise project shelf					
North of Gulf of Kutchh *(No. Projects)*	5	16	8	4	**33**
No. Shipyard, Fisheries and other projects	1	5	1	0	**7**
Port Capacity expansion projects (based on projections made in the year 2007-08)	4	11	7	4	**26**
Capacity (MMTPA)	38	73	115	58	**284**
Investment planned with update of MOUs of Vibrant Gujarat 09 (Rs. Crore)	1,631	14,664	10,786	6,400	**33,481**
South of Gulf of Kutchh *(No. Projects)*	3	17	4	1	**25**
No. Shipyard, Fisheries and other projects	1	5	0	0	**6**
Port Capacity expansion projects (based on projections made in the year 2007-08)	2	12	4	1	**19**
Capacity (MMTPA)	11	52	26	30	**119**

	2008-10	2010-12	2012-17	2017-20	Total
Investment planned with update of MOUs of Vibrant Gujarat 09 (Rs. Crore)	900	6,631	12,800	2,000	**22,331**
Saurashtra Peninsula (Porbandar to Mahuva) ***(No. Projects)***	3	12	11	5	**31**
No. Shipyard, Fisheries and other projects	1	10	2	0	**13**
Port Capacity expansion projects (based on projections made in the year 2007-08)	2	2	9	5	**18**
Capacity (MMTPA)	28	17	65	56	**165**
Investment planned with update of MOUs of Vibrant Gujarat 09 (Rs. Crore)	5,190	7,530	9,161	7,467	**29,348**
West of Gulf of Cambay ***(No .Projects)***	4	8	4	1	**17**
No. Shipyard, Fisheries and other projects	3	6	0	0	**9**
Port Capacity expansion projects (based on projections made in the year 2007-08)	1	2	4	1	**8**
Capacity (MMTPA)	0.38	7	14	1	**23**
Investment planned with update of MOUs of Vibrant Gujarat 09 (Rs. Crore)	711	2,073	1,656	109	**4,549**
East of Gulf of Cambay ***(No. Projects)***	6	20	5	2	**33**
No. Shipyard, Fisheries and other projects	3	14	0	0	**17**
Port Capacity expansion projects (based on projections made in the year 2007-08)	3	6	5	2	**16**
Capacity (MMTPA)	19	39	43	40	**140**
Investment planned with update of MOUs of Vibrant Gujarat 09 (Rs. Crore)	978	12,966	5,327	5,700	**24,971**
Projects without locations (No port capacity expansion projects) (*No. Projects*)	3	2	1	1	**7**
Investment (Rs. Crore)	152	125	2,500	2,500	**5,277**

Source: CRISIL analysis, GMB Project Shelf, Vibrant MoUs, Other Announced projects, GIDB, fresh proposals

It can be observed from the project shelf that:

- Higher capacity creation is planned for 2010-12 and 2012-17 period. Many of the projects in this period were projected in earlier studies to be taken up by 2008-10 period but have been rescheduled due to various delays. Example - Greenfield ports are expected to commission their first phase after 2010-11. Bulk of the projects envisaged by GMB will be implemented on PPP basis.

- Aligned with global boom in ship building industry, large investment has been proposed under VGGIS'09. The proposed investment in shipbuilding industry contributes to 23% of total investment of the ports and shipbuilding sectors. The proposed projects in shipbuilding includes project identified by GMB as well as proposed by invstors during VGGIS'09.

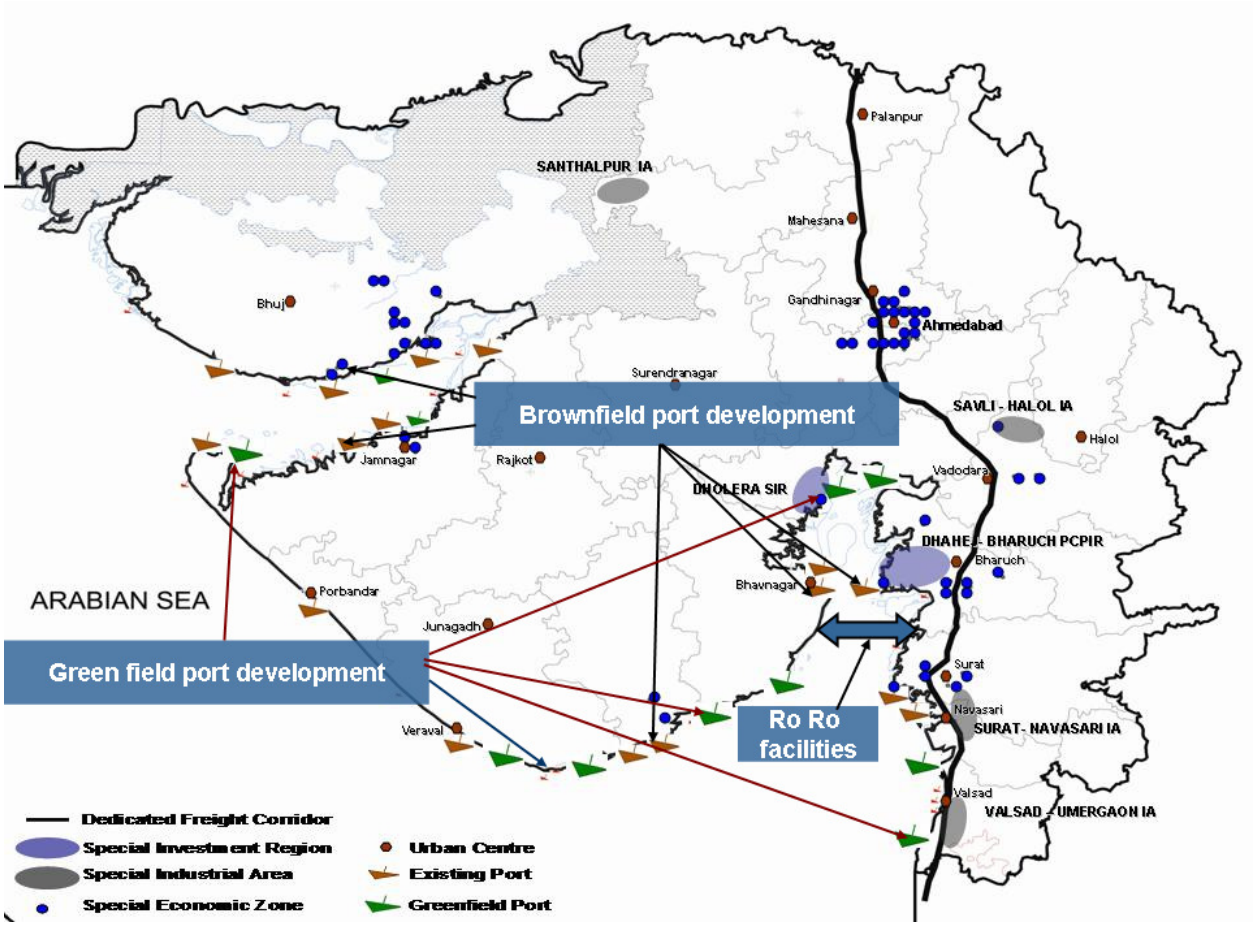
- The largest investments are for Mundra and Pipavav Port expansions. The key port wise investments present a good picture of the project pipeline. The top nine ports in terms of investments represent Rs 63,953 crores which is around 52% of the total investments proposed. These projects are listed in the table below:

Exhibit 7-2: Projects Shelf for key ports

Location	Capacity Addition (mmtpa)	Investment (Rs crore)	Projects
Mundra port	228	20414	Container terminal development, Development of new basin for solid and liquid cargo (especially coal), installation of new SBM, construction of LNG terminal
Pipavav Port and Shipyard	102	10450	Construction of New jetty to Handle container and Solid cargo and shipyard project
Mojap	10	7000	Development of Shipyard
Maroli	38	6000	Development of greenfield port facility for solid, and liquid cargo
Hazira & Magdalla	55	6810	Development of Container terminal, Solid jetty, LNG capacity and SBM
Positra	6	5000	Development of greenfield port facility for solid, liquid and container cargo
Porbandar	15	4800	Development of solid terminal with maritime city and SBM
Sikka	34	3050	Expansion of existing capacity for liquid cargo through new SBMs and liquid as well as multipurpose jetty

Source: CRISIL analysis

Exhibit 7-3: Map showing the location of Brownfield and Greenfield Ports



Key sector issues:

There is a need to limit new ports having already awarded nine new ports along the Gujarat coastline. The existing ports plus the new ports should be able to meet the emerging cargo requirements. Similarly a policy that allows captive jetties under specified circumstances will need to be announced. Government of Gujarat may consider to strengthen own ports by developing terminals and other facilities with private sector participation.

Independent Regulation would become increasingly important given the significant amount of private sector participation in the port sector in Gujarat. A Regulatory mechanism may need to be developed in consultation with all stakeholders.

Given the large increases in investments and cargo handling projections in the State and the multiple roles played by GMB, upgrading the skills of the staff for future requirements would be critical. This could include areas of Regulation, contract administration, procurement and negotiations, International port operations, productivity and supply chain management etc.

A detailed sector writeup is included in Volume II.

8. MANAGING THE GROWING URBANIZATION OF THE STATE - CREATING A KNOWLEDGE ECONOMY

Gujarat is among top three most urbanised states of India and is urbanising at rapid pace. By 2020 more than half of the Gujarat will be urbanised. The rapid urbanisation fuelled by industrialisation and expansion of service sectors will exert significant pressure on existing urban centres expanding them and create new urban areas.

Today more than half of Gujarat's urban population reside in seven large urban centres. Gujarat will need to intervene to ensure that the urban and spatial growth along growth centres/ corridors, ports etc are managed well so that urban services can be provided to all.

The vision:

To radically transform existing cities and develop a new genre of satellite/ theme townships and interconnected twin cities which are safe, efficient, clean and green and offer a high quality of life.

The key strategies for achieving the vision include developing four mission cities; creating basic infrastructure in the smaller municipal corporations and municipalities; and developing new townships, twin cities around existing ones and new economic centres.

Gujarat with an urban population of 38% is among the top three urbanised States in the country. The urban population is highly concentrated in the bigger urban centres with almost 60% of the urban population residing in the six largest cities i.e. Ahmedabad, Vadodara, Surat, Rajkot, Jamnagar, Junagarh and Bhavnagar. While a steady progress has been made in the provision of urban infrastructure such as water supply, sewerage, solid waste disposal, roads and urban transport substantial gaps still remain. Several initiatives have been taken by GoG to address this as part of the "Urban Development Year 2005". The Gujarat Urban development Mission has been established to achieve reform driven, fast track development of identified cities. The Gujarat Municipal Accounting Reform Project has been undertaken since November 2005 to implement computerised accrual based double entry accounting in all municipalities of the State. All municipal corporations have already adopted this system of accounting. Similarly, initiatives have been taken in the area of Property Tax reforms, revision of other user charges to cover costs, and abolition of Octroi.

Given the rapid pace of urbanisation, urban population in Gujarat is expected to exceed 50% by 2020. This will put increasing pressures on the existing urban areas and new areas will get urbanised. New townships along the growth corridors of DMIC and near ports are likely to change the spatial distribution of the urban population in the State. Revenue raising capacity of ULBs will have to get enhanced to meet the growing pressure on service levels. Similarly the capability to undertake large capital investments will need to be developed. The resources required for meeting this need including investments as well as human resources are going to be substantially higher. In order to address these issues a number of

schemes have been launched by the Central Government in the recent past. These include JNNURM, UIDSSMT, BSUP and IHSDP.

Gujarat's vision in the urban sector can be seen as three fold strategies which include:

- To provide 100% basic infrastructure to the urban population thereby making the cities efficient, productive and inclusive
- To position Ahmedabad, Surat, Vadodara, and Rajkot as Mission Cities through provision of excellent infrastructure
- To develop new townships around current and emerging economic centers

The formulation of the shelf of projects is structured around a) Creating four mission cities b) Creating basic infrastructure in smaller municipal corporations and municipalities and c) Development of new townships around existing and new economic centres.

GoG would like to develop Ahmedabad, Vadodara, Surat and Rajkot as mission cities. This is with a view to eventually developing them into global cities. Mission Cities would imply a dynamic economic environment, superior physical and social infrastructure and exceptional standards of living. These cities will need to develop a competitive advantage to attract national and international businesses to locate their offices here, develop world class educational institutions (Ahmedabad already has some) and achieve scale as centres of economic activity. Major funding for these will be targeted from the Central sponsored schemes i.e. JNNURM and BSUP.

The smaller municipal corporations and municipalities will attempt to provide their citizens minimum level of basic services which include water supply, sewerage, storm water drainage, solid waste management and roads. This will ensure both coverage and service levels. An important source of funding for these projects would come from UIDSSMT, Municipal Solid Waste Management project, Gujarat Urban development programme, Integrated Housing and Slum Development Programme.

A number of growth centres existing and proposed are expected to spawn a number of townships in their vicinity. These include the Investment Regions, Industrial Areas, SEZs in the DMIC region, Ports or a cluster of ports that have a combination of large cargo handling and value added services, concentration of Educational, medical, tourist based activities. In addition GoG is already in the process of implementing the GIFT project which in conceptualised as an international financial centre and a city. The Government has already framed the Gujarat Integrated Township Policy to facilitate the development of integrated townships around centres of economic activity.

In addition a metro rail project (MRTS) aimed at developing a high speed corridor between Ahmedabad and Gandhinagar is planned. This project would be undertaken on a PPP basis and meet the projected traffic need s between the two cities.

8.1 Project shelf for urban development in Gujarat by 2020

The total investment requirement for the state in the urban sector has been estimated to be at Rs 111, 699 crores by 2020. The project level investment estimates for the urban centres of Gujarat by the year 2020 is listed in the exhibit.

Exhibit 8-1: Project shelf- investments planned for urban areas (2008-2020)

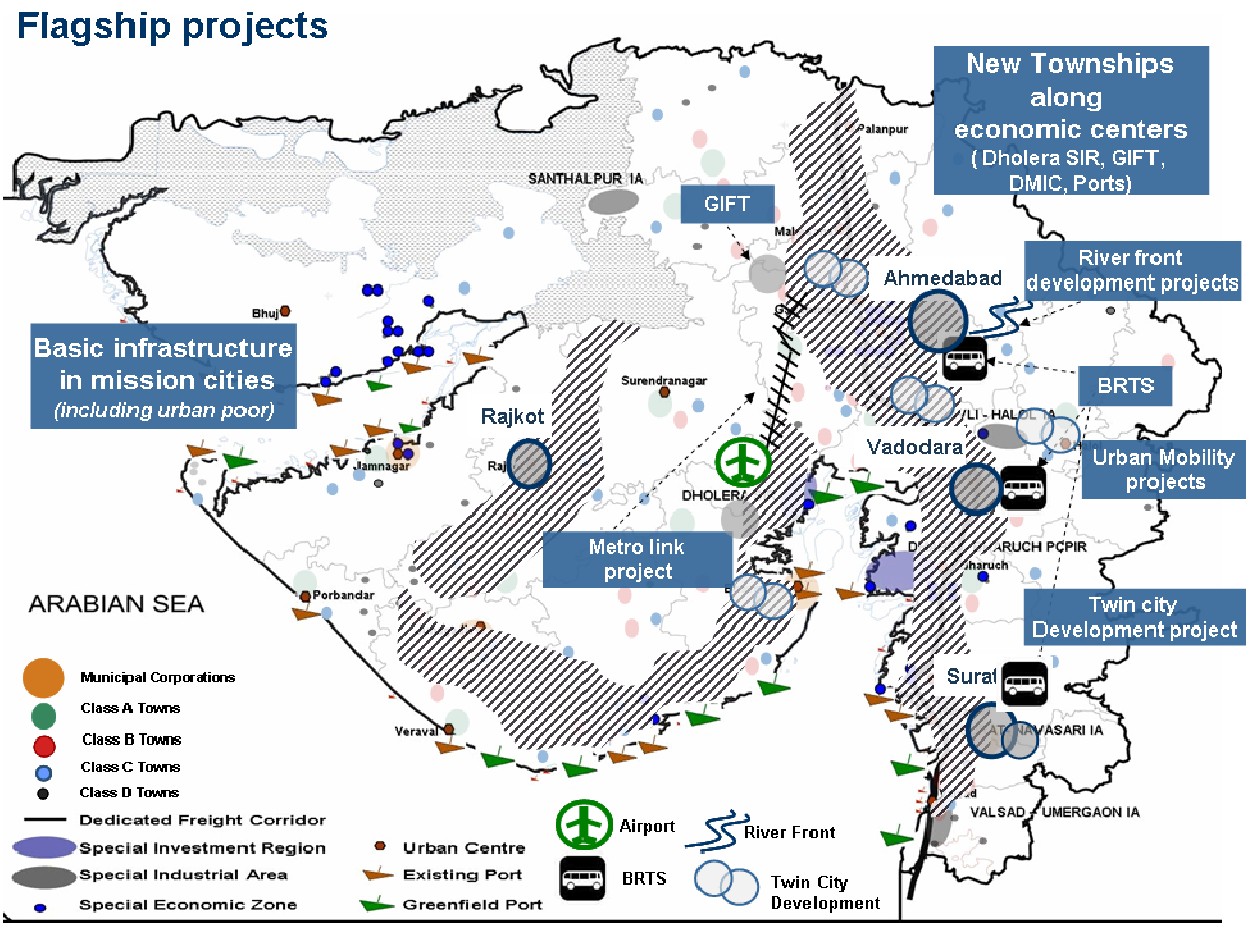
(Rs. crores)

Area of Investment	2010	2012	2017	2020	Total
UIDSSMT	918	1,377	210	135	2,641
IHSDP	91	136	0	0	227
MSWM	162	108	0	0	271
GUDP	720	480	0	0	1,200
Other investments for small towns	1,985	1,323	2,832	2,894	9,034
JNNURM	3,708	5,562	0	0	9,270
BSUP	489	733	0	0	1,222
Other investments for top 4 cities	1,280	1,920	4,900	2,060	10,160
Metro link project	0	0	21,606	14,404	36,010
GITP	2,249	1,499	3,280	2,343	9,371
GIFT	0	0	32,294	0	32,294
Grand total	**11,602**	**13,140**	**65,122**	**21,836**	**111,699**
Grand total (including proposed investments under VGGIS'09)[7]	10%	12%	58%	20%	**111,924**

Source: GIDB GUDM estimates and CRISIL analysis

[7] It may be noted that significant investments have been proposed during VGGIS'09 towards township development projects. These figures were already reflected under our estimates under BIG 2020 and hence have not been revised upwards. Additional investments of about Rs. 225 crores were proposed under affordable housing projects during VGGIS'09; over and above those already covered in our estimates.

Exhibit 8-2: Map showing the proposed shelf of Urban Projects



Key sector issues include –

a) Improving urban infrastructure and its delivery.
b) Accelerating Municipal Reforms with a view to increasing revenues, improving financial management and reporting
c) Building capacity within ULBs at project planning, financial management and implementation of institutional reforms.
d) Facilitating the implementation of mega projects such as GIFT, MRTS etc.

A detailed sector writeup is included in Volume II.

9. PROVIDING ACCESS TO ADEQUATE, SAFE AND AFFORDABLE WATER FOR ALL

Gujarat has only 2% of the country's water resources for 5% of the country's population. Topography across the State is varied and so is rainfall. Three-fourths of the area is unsuitable for ground water withdrawal due to rocky terrain and coastal regions. The supply of water is limited and the State has a history of droughts. Gujarat has made serious efforts in all-important areas of the water sector such as source augmentation, source management and distribution management. It has implemented several schemes under the Sardar Sarovar project, Sujalam Sufalam Yojana and multi-village rural water supply schemes. Progress under the earlier BIG 2020 includes progress on the creation of a state-wide Drinking Water Supply Grid, schemes for water recycling and the Gujarat Water Regulatory Commission Bill which has been drafted.

The vision:

To ensure safe reliable and affordable drinking water for all, and provide stable water supply for agriculture through a pan Gujarat water grid and efficient irrigation systems

Due to erratic rainfall and ground characteristics, there are regional imbalances in the distribution of water. The state can be divided into four distinct units on the basis of water resources endowment namely Kachchh, North Gujarat, South and Central Gujarat and Saurashtra. Kachchh is an arid zone, with scanty rainfall and no perennial rivers. North Gujarat area has rechargeable aquifer but rainfall in this region is very less while ground withdrawal is very high due to excessive irrigation and industrial water demand, leading to the depletion in the ground water table. South and Central Gujarat are heavily agricultural and industrial areas. The over use of chemical fertilizer and industrial waste pollutes the ground water, the region near coast has problems of salinity ingresses. Saurashtra region comprises of rocky formation, it has very low recharging capacity, so ground water replenishment is very low. While North Gujarat, Saurashtra and Kachchh constitute 71% of total geographical area of the State, they account for less than 30% of the water resources. Further, more than 40% rainwater flows into the sea as run off every year due to absence of water conservation structures.

A use-wise analysis of water by domestic, irrigation, industry, energy and other categories indicates that the irrigation demand for water in Gujarat is far higher than the all India figure (91.7% vs. 83%) causing reduced availability of water for domestic and industrial uses. Given the growing urbanisation and industrialisation in the State this poses a challenge. An analysis of per capita consumption in various categories indicates that per capita water supply for large number of rural households is well below national standard of 40 lpcd. The urban water supply is somewhat better. Most Class I urban centres managed to achieve the targeted water supply levels of 100-200 lpcd and the Class II cities show one of the highest per capita availability among Indian cities.

Water rates in Gujarat with respect to other cities reveal that water for industrial usage is relatively expensive as compared to most other Indian States whereas for domestic use its much cheaper in comparison. Clearly industries are subsidising domestic water usage.

The Vision for the water sector in Gujarat can be divided in to three strategeis as follows.

- To create systems and policies towards effective, efficient and sustainable use of water in order to reduce poverty, improve human health and promote economic development.
- To ensure that water supply services are provided by effective, efficient and sustainable institutions that are accountable and responsive to those whom they serve.
- To ensure that water is managed in an environmentally responsible and sustainable manner.

To address the Vision for the sector and to meet the demand-supply gaps with respect to infrastructure and service levels, the following projects have been proposed in the Vision 2020. Key projects in the water sector can be grouped under three categories i.e. (a) industrial and drinking water supply projects (b) Kalpasar project, and (c) Irrigation sector projects.

The industrial and drinking water supply projects are either part of the central Government scheme or State promoted scheme. Major schemes which are currently operational include Accelerated Rural Water Supply Programme, Swajaldhara, Narmada canal based drinking water project,Sujalam Suphalam projects and industrial water supply projects.

The Kalpasar project includes the Kalpasar fresh water reservoir which would provide water for irrigation, industry and domestic usage in Saurashtra, a captive power project, land development, transportation networks and fisheries development. The project is currently being given concrete shape and is expected to be fully completed by 2018-19.

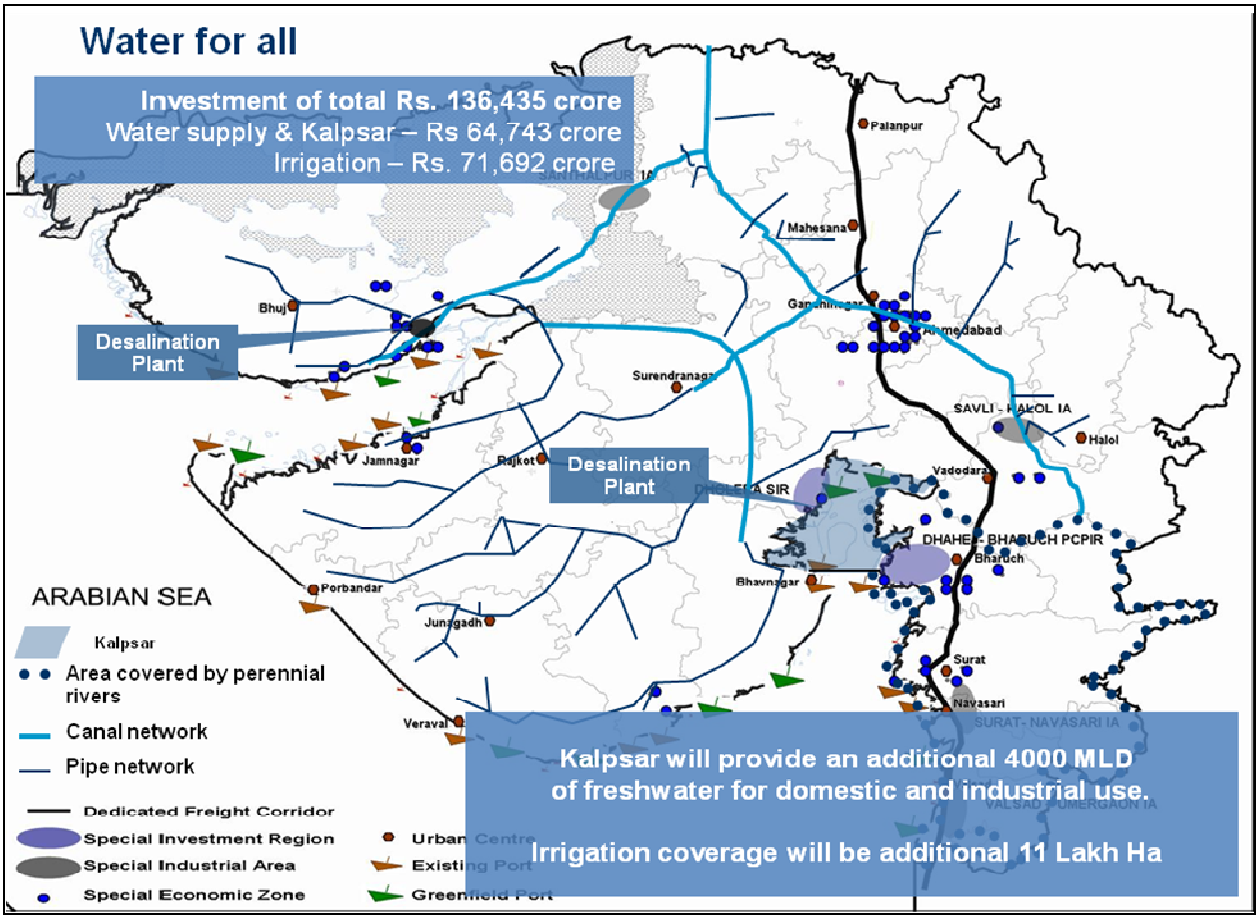
The irrigation sector projects mainly include the outlay proposed for irrigation in the 11th Five Year Plan.

Exhibit 9-1: Project shelf: Domestic, industrial water supply and irrigation

Water Sector Projects	2010	2012	2017	2020	Total
Industrial Water Supply and Drinking water supply projects					
ARWSP	720	480			1,200
SSP	1,080	720	1,440	1,656	4,896
SSY	216	144	288	331	979
Industrial Water Supply	252	168	336	386	1,142
Other Regional water supply	432	288	576	662	1,958
Water conservation and recharge	113	76	151	174	514
Technical improvement	173	115	230	265	783
Desalination plant	252	168	336	386	1,142
Water Supply augmentation	414	276	552	635	1,877

Sub Total	**3,652**	**2,435**	**3,910**	**4,496**	**14,493**
Kalpsar	**100**	**150**	**30,150**	**19,850**	**50,250**
Irrigation Sector	**24,017**	**16,011**	**15,893**	**15,771**	**71,692**
Total	**27,769**	**18,596**	**49,953**	**40,117**	**136,435**[8]

Exhibit 9-2: Map showing proposed projects in water sector



Key sector issues:

1. Addressing the Regional imbalance with respect to access to water.

[8] It may be noted that significant investments have been proposed under the sector during VGGIS'09; mainly towards bulk water supply schemes and water desalination plant. The investments had already been included in our estimates and hence have not been revised based on MoU figures.

2. Rationalising water tariffs towards economic pricing is critical. It is understood that water pricing is a sensitive issue. However in order to attract investments as well as ensuring the sustainability of the sector the O&M costs and capital cost recovery needs to be attempted. Subsidy where required should be targeted and transparent.
3. Targeting a higher level of PPP in the sector. Currently there is a negligible level of private sector participation in the sector. Private sector is unwilling to assume both tariff risks as well as the risks that emanate from water being a sensitive political subject.
4. Establishing a water sector regulator to regulate service levels(especially in rural areas), tariffs, new investments etc. We understand that a bill for establishing a Gujarat Water Regulatory Commission has already been drafted.

A detailed sector writeup is included in Volume II.

10. ENABLING INCLUSIVE GROWTH THROUGH EMPLOYMENT, EDUCATION AND HEALTH

It is a perception that India's rapid economic growth has not been broad based and that the benefits of economic growth have by passed many people. Our data systems are often dated and do not capture the current data on the variety indicators of inclusiveness. On the other hand one of the main objectives of economic growth is human development. It is to ensure that the benefits reach all strata of society and all levels of society are enabled to benefit from economic growth. The Approach Paper of the Eleventh Five Year Plan is titled "Towards faster and more inclusive growth". This reflects the need to spread the benefits flowing from employment and income generation to those sections of society that have been bypassed by the higher economic growth witnessed recently.

The challenge is to define inclusiveness. How does one define inclusiveness? Dr. Subir Gokarn, Chief Economist, Standard & Poor's Asia Pacific, in his lecture on "Inclusive Growth: Dream or Reality"1, has attempted to define inclusiveness. His definition of inclusiveness has the four attributes explained below:

1. **Opportunity**: Is the economy generating more and varied ways for people to earn a living and increase their income over time?
2. **Capability**: Is the economy providing the means for people to create or enhance their capabilities in order to exploit available opportunities?
3. **Access**: Is the economy providing the means to bring opportunities and capabilities together?
4. **Security**: Is the economy providing the means for people to protect themselves against a temporary or permanent loss of livelihood?

The Vision 2020 is a plan for making huge investments in the creation of quality infrastructure. The shelf of projects and investments in Power, Oil & Gas, DFC/DMIC, Ports, Roads, Urban Infrastructure and Water sectors have already been covered so far. Investments in Tourism and Agriculture infrastructure are presented in this section. These investments for the creation of infrastructure are expected to attract an equivalent investment in the creation of manufacturing and services facilities. In the high growth scenario projected for the State, annual increases in the number of jobs is expected to be in the range of 7.58 lakh per annum over the period till 2020. This results from a greater than 6 % annual growth in the number of jobs in industry and services sectors. GoG's growth plans are certainly inclusive on the attribute of "**Opportunity**".

The plans for Education and Health sectors covered here offer opportunities to people for **enhancing their capabilities**. Plans in the Education sector in this report cover Higher and Technical education. This includes establishment of universities in the growth areas of retail, aviation and maritime, establishment of Centres of Excellence in a wide range of areas including bio technology, nanotechnology, governance, urban development etc. Plans for education from Primary to Higher Secondary are the focus of Central and State Government budgets and not covered in this report. Health sector plans cover investments for healthcare townships, medical universities, centres of excellence for knowledge development and

information technology for healthcare etc. An IT University is planned to augment the supply of skills in the sector. Issues of affordability and quality will need to be dealt with in addressing the capabilities attribute.

Access in the context of inclusiveness is about bringing opportunities and capabilities together. Typically employment exchanges are supposed to bring together the job seekers with the employers. While there is a lot of cynicism about the effectiveness of employment exchanges various informal channels and social networks are supplementing the role. Economic **Security**, as explained by Dr.Gokarn in his paper, "has two components: short term security, which provides the means for individuals to tide over temporary disruptions in income, such as unemployment or morbidity. And long- term security, which provides the means of a reasonable standard of living beyond retirement, along with accompaniments such as terminal health care. Our formal systems in this regards are extremely narrow and really do not exist for the vast majority of the population. We have, for most part, depended on traditional social networks to meet these requirements". While programmes and projects must exist in the Departments for addressing both these attributes, they are not a part of this report.

The total investment plannedin the shelf of projects in Tourism, Agriculture Infrastructure, Education and Health are as follows:

Sector	Investments (Rs. Crores)
1. Tourism	48,656
2. Agriculture Infrastructure	19,417
3. Education	15,879
4. Health	16,117
5. IT sector	4,289
Total	**104,358**

10.1 Tourism

Gujarat is the only state in India that has a combination of deserts, forests, coastline and cultural heritage. Its tourism resources comprise of archaeological sites from the Mohenjo Daro and the Harrapan era at Lothal and Dholavira, and a World Heritage Site at Champaner. Wildlife resources comprise of Asiatic lions at Sasangir, many rare species in the Rann of Katcahh and India's only marine national park at Jamnagar. In addition Gujarat has many religious destinations across the state. Given its resources, Gujarat has yet to exploit its tourism potential. Development of the tourism will help build local economies and become an important source of employment generation.

The vision:

To make Gujarat a global tourist destination by promoting its unique combination of deserts, forests, coastlines, cultural and archaeological heritage.

The key strategies for achieving the vision include promoting Gujarat as a global tourist destination through development of themes and destinations leveraging on their unique strengths.

Gujarat's tourist destinations are comparable with those of other popular tourist States. However, the tourist numbers both domestic and international are far lower than the comparable States. Recent initiatives taken by the Government for tourism development include formation of joint venture company with IL&FS IDC, celebrating 2006 as the tourism year, integrated tourism development plan for 37 destinations, constitution of Tourism Promotion Councils at District levels and reduction of entertainment tax from 50% to 25%, VAT on food at 4% and waiver of luxury tax on room tariffs up to Rs. 500.

The project shelf for tourism has been developed based on the following:

- Integrated Tourism Development Projects that have been initiated with the funding assistance of the Government of India. These projects are based on DPRs prepared for 37 identified locations. The projects are relatively small in nature and involve infrastructure improvements in these areas. The project details may undergo modifications as tenders are issued.

- Projects yet to be executed from the earlier Vision 2020 shelf but which still retain relevant have been included.

- Projects identified in this study based on discussions with the Tourism Department and TGCL and by adopting standard industry practices for costing for estimation of investment potential.

Based on the above projects included in the shelf translate to around Rs. 48,656 crores of investment.

Exhibit 10-1: Source of Funding for Project Shelf

Source	Amount (Rs. crores)
Government of India Funding	213
Government of Gujarat	1,179
PPP	47,264
Total	**48,656**

Phasing: Phasing for tourism projects is concentrated in the 2008-2012 period as the gestation period for such projects is not high and the potential need for these projects has been established. Many projects however will only be done in phases, as volumes, and viability builds up.

Exhibit 10-2: Phasing of Project Shelf

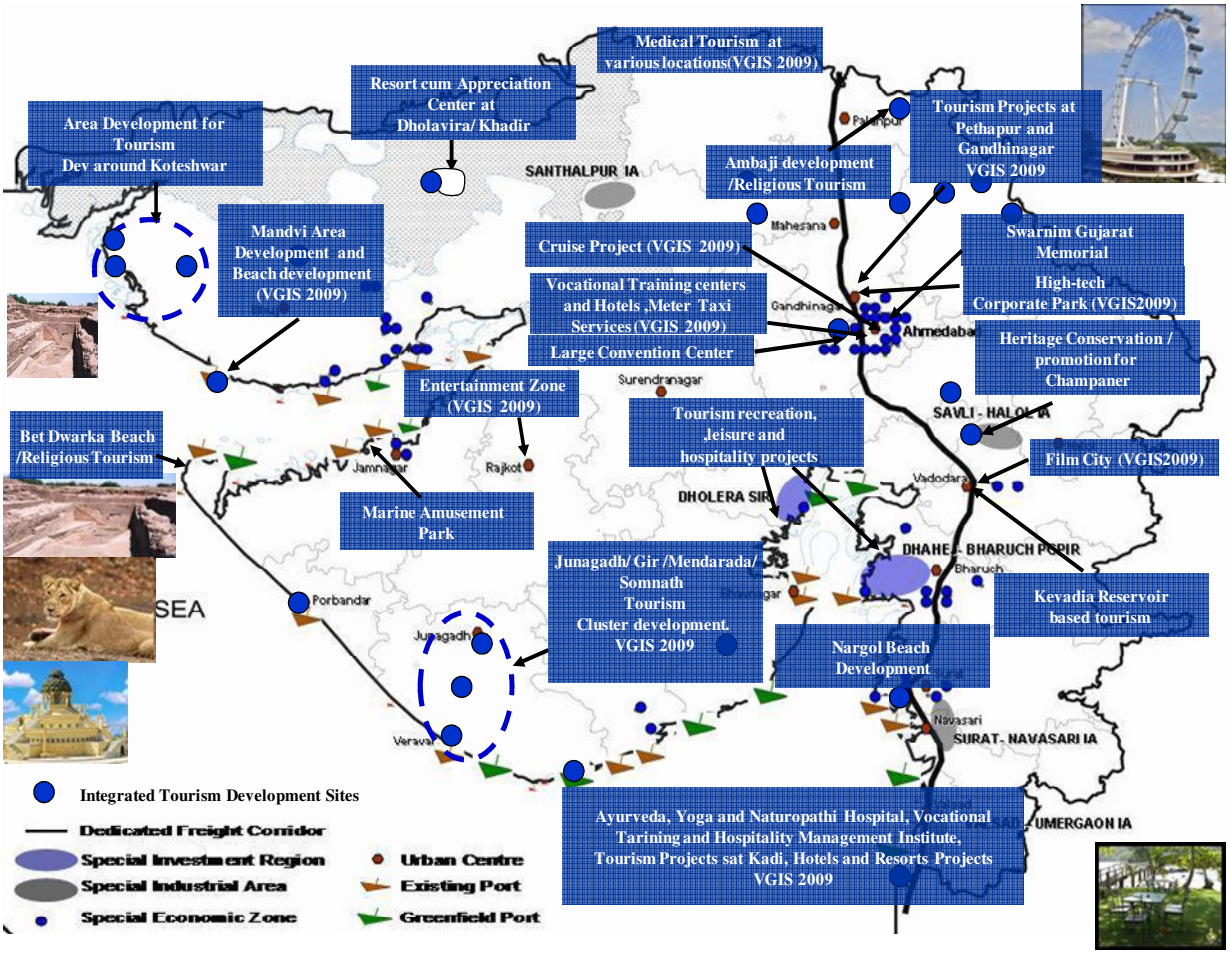
Phase	Amount (Rs. crores)
2008-10	17,058
2010-12	17,886
2012-17	13,712
Total	**48,656**

The proposed shelf of projects covers a number of themes for tourism development. These include coastal tourism, religious tourism, heritage tourism, eco tourism and leisure and business tourism. Key

projects include development of a mega tourism projects at Mandvi in Kutch, development of tourism, recreation, leisure and hospitality projects in the SIR and PCPIR and the hotel based MOUs signed in Vibrant Gujarat 2007.

The key sector issues that need clarity are related to land and property for tourism projects, setting-up of a tourism development fund, providing suitable incentives to tourism projects and strengthening the availability of human resources for the sector.

Exhibit 10-3: Map showing proposed locations of Tourism destinations



A detailed sector write-up is included in Volume II.

10.2 Health sector

Gujarat state is at the forefront in establishing and maintaining sound health infrastructure at various levels. Gujarat has a fairly extensive network of sub centre and primary health infrastructure in rural areas for providing health care services across the State. The urban healthcare requirements are largely met by the private sector. The outreach programmes of the government for creating inclusive infrastructure have had several positive impacts. Going forward, the healthcare requirements will increase many fold with not only the normal population growth, urbanization and increasing awareness levels, but also due to the probable in-migration of population on account of the economic opportunities that Gujarat will provide.

The vision:

To exponentially increase the availability of quality health care infrastructure to bring about a quantum change in health care indices and to reach UMI benchmarks.

The strategies for achieving the vision include providing access to healthcare to Gujarat's citizens, favilitation for greater private sector participation, creating large human reseouce capital to serve the sector and developing health tourism.

A review of key health statistics since 1971 indicate that Gujarat has achieved significant progress in terms of providing primary health care to its citizens. Health care infrastructure in Gujarat is wide spread. There are 2,528 allopathic hospitals of which 503 are under State Health Department which indicates extensive private sector involvement in health care. Human resources form a very important component of the health care services. There are about 39,000 practicing Doctors in Gujarat, a large number of which are private sector practitioners and about about 16,000 registered nurses. The number of medical seats available in Gujarat is far less as compared to other States. Lack of manpower to teach and administer these institutions has been one of the core problems. Increase of medical seats in the State would therefore be possible through private public partnership.

The State Health Department has initiating several reforms to improve the service delivery across the State. Some of these reforms include use of public private partnerships, financial decentralisation, reforms with respect to human resources, grouping of community health centres and Chiranjeevi Yojana. The need for health care is expected to grow at a very fast pace due to socio economic and demographic changes taking place in the State. These can be broadly divided into positive factors and resultant factors. Some of the positive factors include rapid urbanisation and consequent growing demand from urban centres, demographics and rising income levels. Some of the resultant factors are the changing disease profiles and increasing proportion of life style related ailments, and ailments related to growing age profiles. Increasing insurance penetration is also likely to increase the demand for health care. The third important driver for health care is medical tourism. Relative medical costs in India with respect to the developed world are much lower and offer an enormous potential for providing good quality healthcare for overseas patients.

While a number of projects are currently under implementation both through the State budget,through Public Private Partnerships and MOUs signed under Vibrant Gujarat 2007, they are still inadequate to meet current as well as the future demands of the population. The current bed to population ratio for

Gujarat stands at 0.93 beds per thousand population and is far less as compared to a recommended standard of around 5 beds per thousand population. A bed population ratio of 2 per thousand has been assumed for developing the shelf of projects as the existing gap is very large.

Looking at these estimates and the manner in which expansion in services has taken place; it becomes evident that strong private sector participation will be required in order to improve healthcare expanse and service in the State. Private sector participation will have to be in the form of providing integrated healthcare services and creating one-stop service entities to enable economies of scale.

This large requirement can only be met if integrated healthcare townships are developed in various parts of the State. With the development of these townships and also with the expansion of services in the rural areas, there will also be a dire need to constantly evolve the knowledge base within the medical sciences arena. This evolution will have to be backed with a strong and prudent application of technological changes to improve the healthcare delivery as well as to develop alternatives.

All of the above will require trained and skilled manpower to ensure the success of the overall healthcare environment. Thus the need for a medical university. Gujarat has made limited progress in the area of manpower development and hence will need the development of a medical university.

All of the above mentioned arguments have been captured into a shelf of projects that the State should pursue till the year 2020 to ensure that the development of healthcare services in the State is cutting edge, holistic and inclusive at the same time. This shelf of projects has been presented below:

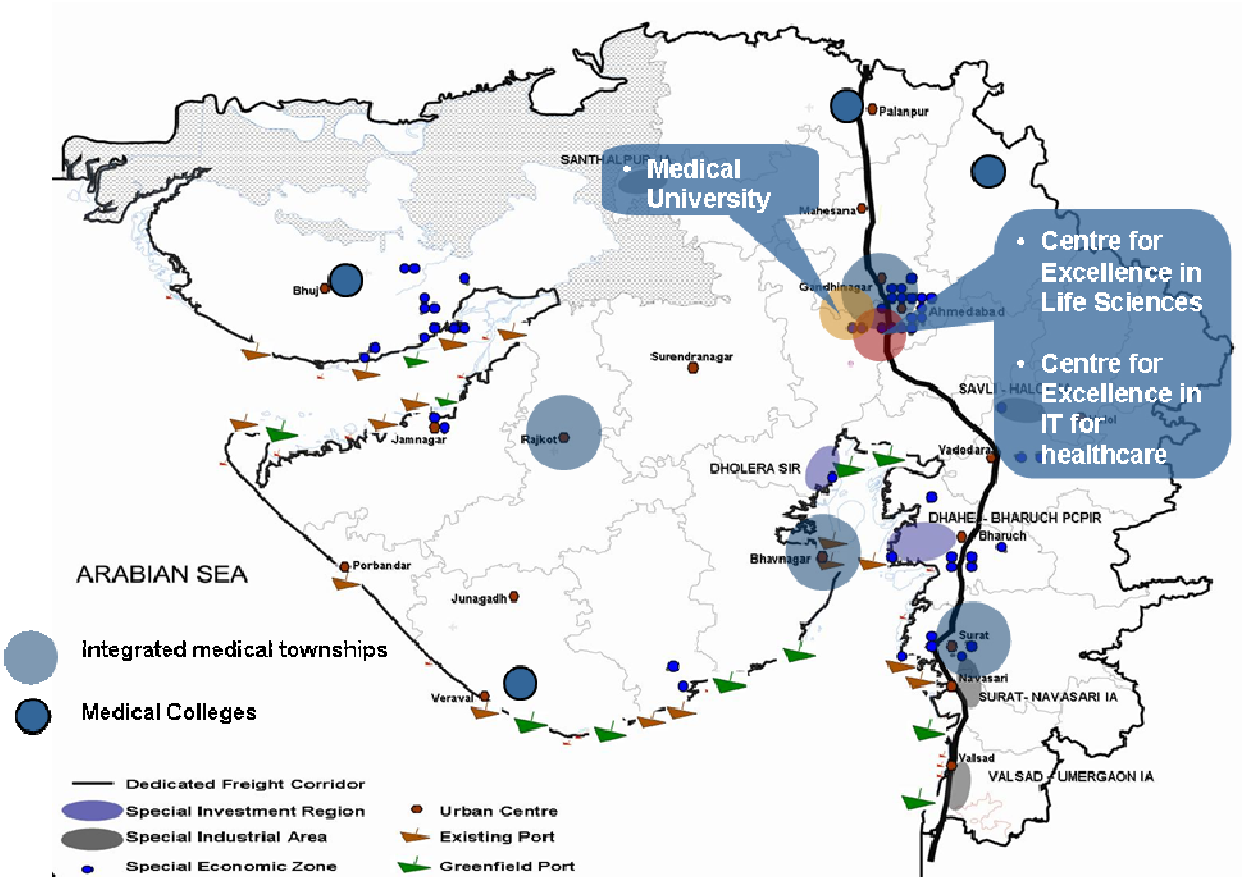
The table below indicates the investment phasing till the year 2020. The phasing has largely been envisaged through a systematic infusion of activities for each of the proposed projects. For instance, it is envisaged that by the year 2012, one integrated healthcare township will come up largely keeping in mind the scale of investments. The subsequent years will see a peak in investments and then a normalization.

Exhibit 10-4: Investment phasing till 2020

Project	Total No.	Total Investment	2012		2017		2021	
			No	Investment	No.	Investment	No.	Investment
Integrated healthcare townships (Aim to create at least 50,000 beds)	4	10,000	1	2,500	2	5,000	1	2,500
Develop a Medical University	1	200	1	200				
Centre for excellence in life sciences	3	1,500	1	500	1	500	1	500
Centre for excellence in Knowledge Development and Information	2	200	1	100	1	100		

Technology for healthcare								
Centre for excellence in Indian system of medicine	1	50	1	50	-	-	-	-
Centre for excellence in Pharmaceuticals	1	35	1	35	-	-	-	-
Additional Investments Commitments made during VGGIS '09	-	4,132	-	NA	-	NA	-	NA
Total		**16,117**	**-**	**3,385**	**-**	**5600**	**-**	**3000**

Exhibit 10-5: Map showing proposed locations of medical townships, medical colleges & centres of excellence



10.3 Education

Gujarat has many educational institutions of repute that are renowned not only within the country but also internationally. Improving literacy levels and enhancing the quality of education has been a major thrust

area for the government. In the past, Gujarat has made significant progress in enrolling children at the primary level with enrolment levels close to 100% and reducing the drop out ratios from schools both at primary and secondary levels through various schemes and incentives. Improving the quality of graduates passing out of various collages in the state has been another area of focus for the government. Under various programs and schemes the government has partnered with the private sector for improving the employability of its graduates and preparing them for the industry.

Gujarat will need to substantially upgrade its education infrastructure and sustain efforts for improving enrolment rates as well as reducing drop out rates at both primary and secondary levels. Investments in industry, services and infrastructure in Gujarat will further raise the demand for trained human resources significantly. Increasing urbanization and awareness levels of the populace will further push the demand for quality education infrastructure. These along with the need to bring about radical changes in the system to become a knowledge society pose significant challenges for Gujarat.

The vision:

To create a widespread network of educational institutions to make Gujarat a globally recognised knowledge society

The key strategies to achieve this vision include creation and sustaining infrastructure for providing primary and secondary education across the state; developing state of the art teacher training facilities, research institutions, expanding higher and technical education, developing educational infrastructure with private sector participation.

The focus of this report is on higher and technical education as the Central and State level education programmes are largely focused on primary and secondary education. Gujarat's significant economic progress and high level of industrialisation has not been matched by a commensurate growth in the infrastructure for higher and technical education. The growing economy of Gujarat and the projected huge investments would require large number of skilled and technical manpower. A comparison with other States clearly indicates the paucity of institutions in Gujarat viz. universities, institutions of national importance and research institutions. Similarly a comparison of intake in the AICTE approved institutions of various States presents Gujarat adversely in comparison to most other States. It is estimated that close to Rs. 2,500 crores annually would flow out of Gujarat due to inadequate seats for technical and professional education in the State. All this point to the need for a significant increase in intake capacities of technical and professional institutions required to meet the growth aspirations of the State. The State has taken a number of initiatives in this area. It is also increasingly engaging with the private sector in this area. Some of the initiatives that the State has undertaken include:-

- Society for Creation of Opportunities through proficiency in English (SCOPE),
- Gujarat Knowledge Corporation,
- Gujarat Technical University,
- MOU with Suzlon Foundation for upgrading education imparted in various Polytechnics.

A projection of demand and supply for 2011 and 2021 indicates that the demand for higher education as well as technical education is likely to increase substantially as 27% and 24% of the population(respectively) will be in the age group of 10 to 25 years. In comparison on the supply side the number of seats available for graduate and post graduate courses in technical education is largely inadequate.

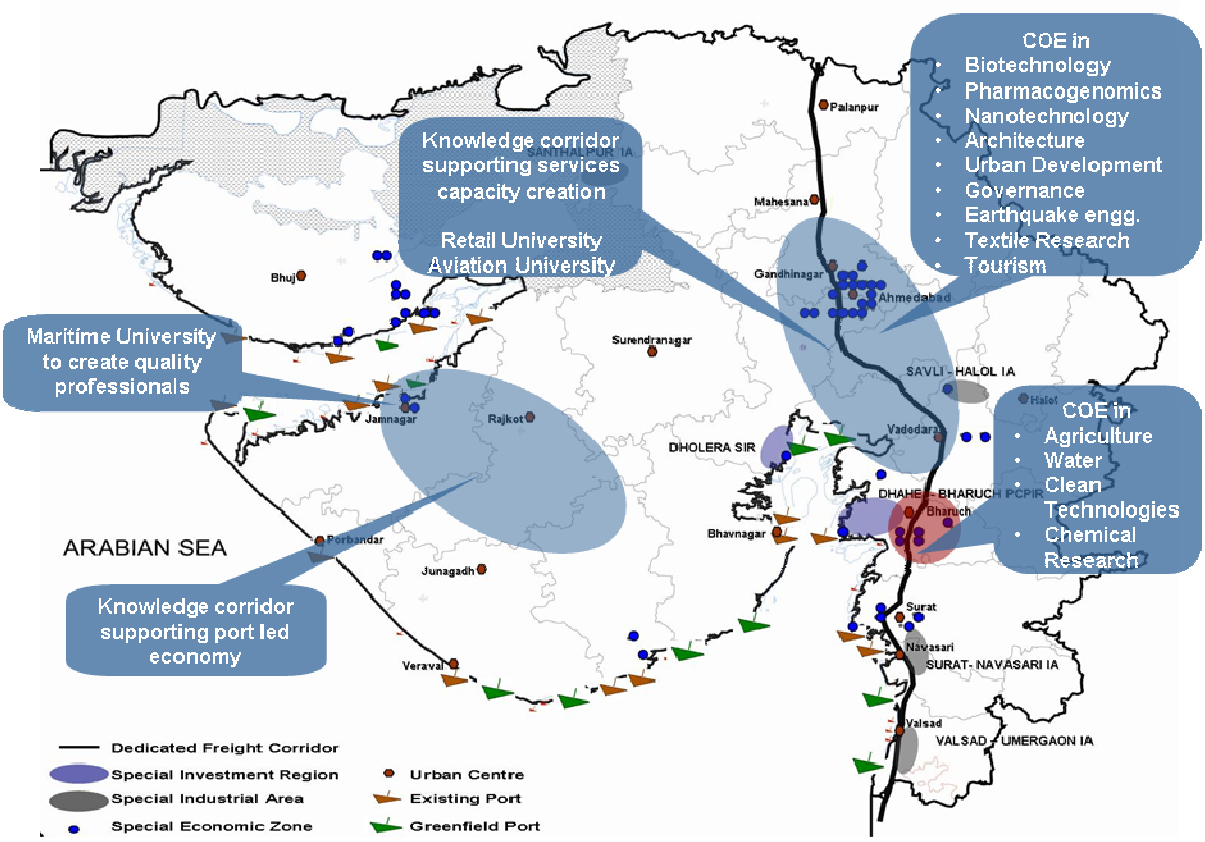
Vision for the Education sector aims at the transformation of State into a globally recognised knowledge society. The proposed shelf of projects includes creation of specific institutions in growth sectors such as aviation, retail and maritime, creating Centres of Excellence across a wide range of areas, developing a policy framework for private sector participation in higher technical education and developing of two knowledge corridors that provide a fertile environment for these institutions and centres to flower.

Exhibit 10-6: Proposed shelf of Projects and investment phasing

PROJECT	INVESTMENT (IN RS. CRORES)	PHASING			
		2010	2012	2017	2020
Develop a Knowledge Corridors (2 overall)	10000	4000	3000	2000	1000
Develop a policy framework for private sector participation in higher and technical education	5	3	1	1	0
Undertake a structured market assessment of the emerging trends in manpower demand across sectors	5	2	2	1	0
Institute pro-active market oriented teacher training institutions (at least 10)	100	30	30	20	20
Establish a Maritime university	50	30	10	5	5
Establish a Retail management university	50	30	10	5	5
Establish an Aviation university	100	50	30	10	10
COE In Biotechnology	50	50	0	0	0
COE In Nutraceuticals Research	35	10	15	5	5
COE In Governance	25	20	5	0	0
COE In Textiles Research	35	10	10	10	5
COE In Chemicals Research	35	20	10	5	
COE In Architecture & Design	35	20	5	5	5
COE In Nanotechnology	45	25	10	5	5
COE In Agriculture	25	25	0	0	0
COE In Earthquake Engineering Research	25	10	10	5	0
COE for Urban Development	25	25	0	0	0
COE for Water	50	30	10	5	5
COE in Cleaner Technologies	35	15	10	5	5
COE in Space research	45	15	15	10	5
COE in Tourism	15	15	0	0	0

Additional investments from VGGIS '09 MOUs	5089				
Total	**15879**	**4435**	**3183**	**2097**	**1075**

Exhibit 10-7: Map showing the proposed knowledge corridors



A more detailed writeup is included in Volume II.

10.4 Information Technology Sector

Recognising the importance of Information Technology for employment and services sector growth, Government of Gujarat notified an IT Policy for the State in November, 2006. This Policy encourages a rapid expansion and growth of the knowledge based economy in the State. Accordingly, Government has plans to attract investments in the IT Sector and create employment opportunities for about 200,000 persons in a period of 5 years.

The earlier Big 2020 envisaged Gujarat as a knowledge economy and targeted creation of a world class knowledge corridor in the Ahmedabad-Gandhinagar-Vadodara region. Plans for the region include promotion of applied industrial research across sectors, attraction of IT and ITES companies and development of BPOs and KPOs. Two of the key areas required for the success of the sector are availability of land and availability of professional talent. Projections for land availability indicate deficit of

land in the later part of the 2012-20 period. An assessment of availability of the IT resources indicates a shortage of technical graduates for the IT industry in the 11th Plan period itself.

As on August 2008, the state had 13 approved IT SEZs. Moreover, 3 additional IT SEZs in the state have got approval in the Board of Approvers meet in mid September[9]. Government of Gujarat is pro-actively promoting Gujarat as an investment destination.

In view of ongoing process of approval of SEZs by Board of Approvers, it is difficult to predict the future SEZs. However, it is estimated that an equal number of additional IT/ITeS SEZs are likely to come in the state. An IT University is planned for augmenting availability of trained manpower.

In addition, information technology park entailing infrastructure requirement of Rs. 300 Cr. are expected to come up in the state.

The summary of investments required considering the new projects is as under.

Exhibit 10-8: Summary of investments required till 2020 for existing as well as additional shelf of projects

Project	2010	2012	2,017	2020	Grand Total
SEZs	194	1,050	625	375	2,244
IT University	50	50	63	38	200
Private IT Parks	44	100	125	75	344
VGIS 2009 MoU investments not covered above					1501
Grand Total	**288**	**1,200**	**813**	**488**	**4,289**

10.5 Agricultural infrastructure

Gujarat is endowed with abundant natural resources in terms of varied soil, climatic conditions and diversified cropping pattern suitable for agriculture activities. Agricultural output of Gujarat has witnessed a growth from 10.1 MMT in 2003 to 19.6 MMT in 2007.

Gujarat experiences low and unpredictable rainfall. This coupled with scarce water resources leads to fluctuating levels of agriculture output thus becoming a major cause of economic instability. The steady growth of the agro-economy is dependant on augmenting surface water resources. The agricultural sector in Gujarat is witnessing a structural change with Narmada waters reaching command area and reduced dependence on rainfall. The development of Agriculture in the state would lead to a quantum change in the quality of life of its agriculture dependent rural population through greater wealth creation. Gujarat has a big opportunity to nurture an agro processing industry in the next decade.

[9] Details of size, investment and location are not available.

The Vision

To create a network of post harvest agriculture infrastructure to ensure better access to markets

The strategy for achieving the vision includes development of post harvest agriculture infrastructure to reduce losses and getting best value for the farmers produce. These would include development of Mega Agro-Food Parks, State-of-the art cold storages and development of all-round port based agricultural infrastructure

Gujarat currently has 113 lakh ha. of area under crop. Major agricultural crops in the state include Bajra, Groundnut, Cotton, Rice, Maize, Wheat etc. Apart from agricultural crops, Gujarat also has Horticultural crops like Banana, Potato, Sapota, Onion, Isabgul etc.

Agricultural output in Gujarat has experienced a lot of volatility in the past 5 years. The output has gone-up from 10.1 million MT in 2003 to 19.6 million MT in 2007. The area under agricultural crops has increased in Gujarat, from 80 lakh ha. in 2003 to 101 lakh ha in 2007. Stable growth of Horticultural produce is one of the key features of Gujarat's Agricultural sector. Area under horticultural crops has gone up from 6.9 lakh ha in 2002 to 11.2 lakh ha in 2007. The output has also grown in line from 6.1 million tonnes to 12.1 million tonnes in the corresponding period.

The agricultural sector in Gujarat is witnessing a structural change with Narmada waters reaching command area. The dependence on rainfall is reducing. This structural change can be compared with the change brought by green revolution in Punjab.

In view of this the Vision for agriculture in Gujarat envisages a quantum change in the quality of life of its agriculture dependent rural population through greater wealth creation. This is planned through achieving sustainable increases in productivity and higher value addition to agricultural produce. Gujarat plans to emerge as a world-class producer and supplier of crops and processed products in which it enjoys competitive advantage.

The agricultural Infrastructure covered in this document is post-harvest infrastructure. Animal husbandry and fisheries & their infrastructure requirement is not covered. The project shelf includes infrastructure creation for agro food processing such as Cold Storage capacities, Irradiation facilities and food parks/ integrated food parks.A total investment of Rs.9134 crores is planned upto 2020.

Exhibit 10-9: Summary of investments required

Project	2,012	2,020	MoU VGGIS'09*	Grand Total
Agriculture Export Zone	8	-	250	258
Agro-food parks	746	1,740	-	2,485
Banana pack-house	7		26	33
Center for perishable cargo	8			8

Cold storage projects	163	500	-	663
Development of direct-to-market agricultural facility	1,500	2,500	7	4,007
Development of Mega food park	650	650	10,000	11,300
Gamma irradiation facilities	50	200	-	250
Horticulture parks	43		-	43
Upgradation of existing APMCs	100	260	-	360
VHT plant for mangos	10			10
Grand Total	**3,284**	**5,849**	**10,283**	**19,417**

11. THE REVISED SHELF OF PROJECTS BIG 2020

11.1 Progress & achievement on the 2005 BIG 2020 agenda

A review of the progress in the major sectors of the earlier BIG 2020 agenda is presented in the table below. The review clearly brings out the excellent progress made in the Gas, Ports, Roads and Industrial Parks/SEZ sectors. Railway and Airport have shown limited progress on the Agenda. The Power sector has made progress but got constrained by external EPC capacity limitations. Urban sector plans have really shifted gear post launch of JNNURM and were not prominent in the earlier BIG 2020.

While this is a review of three years after the launch of BIG 2020, it highlights the impressive progress Gujarat has made in key sectors. It also reflects GoG's keenness and ability to implement plans.

Exhibit 11-1: Progress on the earlier BIG 2020 agenda

Sector	Goals/Plants in the 2005 BIG 2020 agenda	Progress to date
Power	One of the objectives was to achieve installed capacity of 17851MW by 2010.	Latest analysis indicates a capacity of 16184MW by 2010. The main reason shortfall of approximately 1700MW is the tight EPC market for power generation projects
Gas	Some of the objectives were: 1. Implement Phase II of the gas grid 2. Expansion of PLL LNG terminal & a new LNG terminal 3. City Gas Distribution 4. E&P activity	Progress on these: 1. Phase II gas grid is in advanced stages of commissioning and tenders for the commencement of Phase III awarded or in process. 2. Expansion to 10mmtpa already underway and expected completion by2009. Work on new LNG terminal at Mundra has commenced and a fourth terminal is being envisaged 3. A large number of cities are being connected to the gas grid and the CGD network development is in process. 4. E&P activity has progressed.

Sector	Goals/Plants in the 2005 BIG 2020 agenda	Progress to date
		GSPC likely to commence supply from KG from 2013 onwards. GSPC active partner in a number of E&P projects awarded in NELP V & VI
Industrial Parks/ SEZs	The earlier BIG 2020 envisaged the implementation of three SEZs i.e. Hazira, Mundra and Dahej.	All three SEZs mentioned have been notified. In addition 13 new SEZs have been notified, 21 SEZs formally approved and 11 SEZs have received in principal approval.
Roads	A total of 157 projects extending 5000kms & with investment of Rs.15163 were planned. Out of these 8 projects were proposed to be undertaken under PPP with and investment of Rs.979 crores.	Off the 157 around 114 road projects extending 4256 kms have been taken up for development under different SHDP schemes and Pragati Path. Six out of the proposed 8 PPP projects have been taken up. These extend over 244 kms as against the planned 344kms
Ports	The study planned for an increase in port capacity from 138 mmtpa in 2004-05 to meet the projected demand in the range of 324mmtpa by 2015 and 404 mmtpa by 2020. A project shelf was developed with envisaged investments of Rs.9775 crores between 2005-10 and Rs.8765 crores between 2010-20. Bulk of the investments was to be financed through PPP	As against this around Rs.10,000 crores of investments have already been materialised through PPP in since 2003- 2007.
Railway	A total of 32 projects were included in the shelf. Projects connecting the State to Delhi and Mumbai were also included. The total investments envisaged were to the tune of Rs.10611 crores.	Some of the projects suggested for immediate phasing have been already implemented. For example the Gandhidham-Palanpur line is already operational in the PPP format. However a bulk of the projects are yet to be implemented.

Sector	Goals/Plants in the 2005 BIG 2020 agenda	Progress to date
Airports	The BIG 2020 proposed a project shelf of Rs.1503 crores. The projects mainly related to the key airports of Ahmedabad, Vadodara, Rajkot, Surat & Ankleshwar. 80% of the investment was for the proposed international airport at Ahmedabad.	The modernisation of Ahmedabad airport has been taken up. Rajkot and Vadodara will be taken up in AAIs plans for the modernisation of 35 non metro airports. The upgradation of Surat has been deferred due to poor demand. Greenfield projects of Ahmedabad and Ankleshwar are yet to be taken up.
Tourism	Presented a comprehensive tourism plan with a number of themes for development.	A large number of projects identified in the Plan have been taken up for implementation.
Urban Infrastructure		Urban Infrastructure has seen a major boost in plans and investments post the launch of JNNURM

11.1.1 The revised shelf of projects

At Rs. 11,80,912 crores the revised Big 2020 shelf of projects is much bigger than the 2005 version (Rs. 340,672 crores). This reflects the initiatives taken by the Departments of the Government of Gujarat to shape projects and programmes so as to capitalise on the major changes taking place in the environment. The review was undertaken in light of the major changes such as DFC/DMIC, JNNURM, the GIFT project, UMPP project etc.

Sectors that have seen big changes of the shelf of projects and thereby to the quantum of planned investments include energy, transportation, industrial infrastructure and urban development. In the power sector the projected increase in capacity for generation by 2020 is higher by nearly 10,000 mega watts. In the Gas sector there are plans for 2 LNG terminals, a refinery for export, a larger plan for city gas distribution and a bigger deployment on E&P. The Port and Road sector reflect plans for leveraging on the DFC opportunity and thereby for increasing trade as well as connectivity to growth centres. In the area of Urban Infrastructure major increases in proposed investments are due to the plans for provision of basic services to urban centres, creation of mission cities, MRTs between Ahmedabad and Gandhinagar and the GIFT project. There is also a much larger planned investment for knowledge development and tourism. This edition of Big 2020 does not cover telecom. New sectors covered include health, agri-infrastructure and environment.

Exhibit 11-2: BIG 2020 Aggregate Investments for the Revised Shelf of Projects

(Rs. crores)

No.	Sector	Rs Crores		Remarks
		BIG 2020	Review	
1	Energy - Power Sector	87,620	225,254	Increase mainly due to higher generation capacity of around 10,000MW
2	Energy - Gas Sector	34,530	123,366	Increase mainly due to additional LNG terminals, export based refinery and thrust on CGD
3	SIR Dholera		108,520	DFC/DMIC catalysing investments into SIR, Industrial Areas and SEZs. Includes Rs.100,000 of MOU investments which are based on preliminary estimates
4	Industrial Nodes & SEZs within DMIC & other than SIR Dholera		33,521	
5	Industrial Parks and Special Economic Zones outside DMIC	23,150	25,736	
6	Roads	15,164	73,443	Bigger shelf of Road development projects and Mumbai-Vadodara expressway
7	Ports	18,540	119,957	Incremental capacity addition much higher at 786 mmtpa till 2020
8	Railways	10,611	85,609	Linkage projects for DFC/DMIC and bullet train between Ahmedabad-Mumbai, Ahmedabad-Rajkot-Veraval, Ahmedabad-Jamnagar-Dwaraka
9	Logistics parks & services	-	4,248	Five logistics Parks along the DFC.
10	Airports	1,531	15,898	Plans for a greenfield international airport near Ahmedabad
11	Urban Infrastructure	17,837	111,924	Major increase due to GIFT,MRTS and for creating mission cities
12	Water Supply	112,941	136,435	Includes Kalpasar, drinking water projects and budgeted irrigation projects
13	Information Technology Related Projects	-	4,289	Creation of additional IT/ITES SEZs
14	Tourism	13,342	48,656	Theme based tourism projects plus leisure / hospitality projects in SIR & PCPIR
15	Agro infrastructure	-	19,417	Infrastructure for post harvest food processing
16	Education	5,406	15,879	Development knowledge corridors, universities and centres of excellence

No.	Sector	Rs Crores		Remarks
		BIG 2020	Review	
17	Health	-	16,117	Creation of integrated healthcare townships and centres of excellence
18	Human resource requirement and development	-	200	Capacity building and development of government and quasi government staff
19	Environment	-	12,443	Investment for hazardous waste management, central effluent treatment etc
	Total	**340,672**	**1,180,912**	

Note: (1) The estimates are preliminary and based on data available with the departments. (2) Investments in health and education mentioned in the table are over and above the budgetary expenditure incurred by the government in these sectors. Only projects with PPP opportunities are part of this shelf. (3) The environment projects shelf is incremental to the environmental protection measures taken up with any development project.

11.1.2 The phasing of investments

The table below presents the phasing of investments in the shelf over four periods i.e. upto 2010, 2012, 2017and 2020. While the period upto 2012 coincides with the XI th plan, the interim year 2010 marks the completion of 50 years of the formation of the State. The segregation of investments in the period upto 2010 is relevant in the context of the global meltdown. The slowdown of private sector investments would require focussed efforts on behalf of the Government of Gujarat to allocate resources to maintain the momentum of the BIG 2020 agenda.

The distribution of investments over the period are 33 percent in the XIth plan, 47 percent in the XII th plan and 20 percent in the balance period. Some underlying drivers of this phasing are; Power, Roads, Water, Urban and Port investments dominate the XI th plan period. The XII th plan drivers of investments include the export based refinery, GIFT project, MRTS, bullet train between Ahmedabad-Mumbai and Ahmedabad & key centres of Gujarat, and the Kalpasar project.

Exhibit 11-3: BIG 2020 Revised Shelf of Projects: Phasing of Investments

(Rs. crores)

No.	Sector	Total Rs Crores	Phasing - Rs Crs			
			2010	2012	2017	2020
1	Energy - Power Sector	225,254	36,676	47,661	36,760	104,158
2	Energy - Gas Sector	123,366	10,097	16,363	81,235	15,672

No.	Sector	Total Rs Crores	Phasing - Rs Crs			
			2010	2012	2017	2020
3	SIR Dholera	108,520	0	4,201	104,319	0
4	Industrial Nodes & Sezs within DMIC & other than SIR Dholera	33,521	0	5,671	27,850	0
5	Industrial Parks and Special Economic Zones outside DMIC	25,736	0	15,876	9,860	0
6	Roads	73,443	22,254	33,995	12,162	5,031
7	Ports	119,957	9,562	43,989	42,230	24,176
8	Railways	85,609	2,093	6,238	77,278	0
9	Logistics parks & services	4,248	2,104	2,144	0	0
10	Airports	15,898	2,874	8,573	4,452	0
11	Urban Infrastructure	111,924	11,603	13,362	65,122	21,837
12	Water Supply	136,435	27,769	18,596	49,953	40,117
13	Information Technology Related Projects	4,289	288	1,200	1,563	1,239
14	Tourism	48,656	17,058	17,886	13,712	0
15	Agro infrastructure	19,417	0	3,285	5,142	10,991
16	Education	15,879	4,435	3,183	4,642	3,620
17	Health	16,117	0	3,385	7,666	5,066
18	Human resource requirement and development	200	70	70	60	0
19	Environment	12,443	0	2,855	6,878	2,710
	Total	**1,180,912**	**146,883**	**248,532**	**550,882**	**234,615**

11.1.3 Sources of funds

The table below shows that bulk of the funding (79%) has to come through the PPP route. Consequently all actions with respect to enabling private investments need to be accelerated. The Action Agenda in Volume III dwells on this issue. Large GOG's investments are on the water, urban, trunk gas pipeline and district road projects. Private sector participation in these areas is still at the nascent stage. Given the large investments required to be made by GOG, a mechanism needs to be put in place for allocation of government funds in a timely manner. Moreover as mentioned earlier, in the current situation GoG may require to consider a larger funding role in the period upto 2010.

Exhibit 11-4: BIG 2020 Revised Shelf of Projects: Sources of Funds

No.	Sectors	Total Rs Crores	Sources of funds - Rs Crores			
			Central Gov	GoG/ GoG Company.	Debt	PPP
1	Energy - Power Sector	225,254	-	13,808	55,232	156,214
2	Energy - Gas Sector	123,366	-	20,433	-	102,933
3	SIR Dholera	108,520	392	890	-	107,238
4	Industrial Nodes & Sezs within DMIC & other than SIR Dholera	33,521	403	2,558	-	30,560
5	Industrial Parks and Special Economic Zones outside DMIC	25,736	-	500	-	25,236
6	Roads	73,443	4,779	25,180	4,373	39,110
7	Ports and ship building	119,957	-	1,634	-	118,323
8	Railways	19,309	10,991	-	-	8,318
9	Logistics parks & services	4,248	-	-	-	4,248
10	Airports	15,898	748	3	-	15,147
11	Urban Infrastructure	34,249	6,668	23,529	720	3,332
12	Water Supply	14,493	-	13,351	-	1,142
13	Information Technology Related Projects	4,289	-	200	-	4,089
14	Tourism	48,656	213	1,179	-	47,264

15	Agro infrastructure	19,417	-	443	-	18,974
16	Education	15,879	-	1,166	-	14,713
17	Health	16,117	-	797	-	15,320
18	Human resource requirement and development	200	-	50	-	150
19	Environment	12,443	-	1,155	-	11,288
	Sub total - A	***914,995***	***24,194***	***106,876***	***60,325***	***723,599***
		100%	3%	12%	7%	79%

No.	Mega projects	Total Rs Crores
1	Kalpsar project	50,250
2	Irrigation sector	71,692
3	Metro rail for Ahmedabad-Gandhinagar	36,010
4	Bullet train- Ahmedabad-Mumbai, Ahmedabad-Rajkot-Veraval, Ahmedabad-Jamnagar-Dwarka	66,300
5	Townships under Gujarat integrated township policy	9,371
6	Infrastructure for GIFT project	32,294
	Sub total - B	***265,917***
	Total Investments	**1,180,912**

11.1.4 Impact of investment proposed under Vibrant Gujarat Global Investors' Summit

The government of Gujarat has been proactively attracting investments for the state through Vibrant Gujarat Global Investors' Summits, The following presents the investments proposed in the summits and their impact on the BIG 2020 project shlef.

Exhibit 11-5 Impact of investment proposed under VGGIS **(Rs. crores)**

Investment (Rs. Crores)	VGGIS		BIG 2020
	Total	***Infrastructure sectors***	
BIG 2020 (2005)			**3,57,469**
Vibrant Gujarat Global Investors Summit (VGGIS) - 2007	**461,835**	234,066	
Revised investment shelf of BIG 2020 (August 2008) Reconciliation of MOUs singed in VGGIS'07			**3,83,363**
Revised investment shelf of BIG 2020 (January 2009) Detailed discussions with departments & identification of new projects			**9,79,912**
Vibrant Gujarat Global Investors Summit (VGGIS)– 2009	**1,203,935**		
Total MOUs signed for infrastructure sectors		**871,955**	
Projects identified and covered under BIG 2020 & includes investments beyond infrastructure		670,955	
Additional MOUs for pure infrastructure projects – added to BIG 2020 project shelf		201,000	
Revised investment shelf of BIG 2020 (July 2009) Ongoing discussions with departments and Reconciliation of additional infrastructure MOUs singed in VGGIS'09			**11,80,912**

Note – BIG 2020 does not include industrial investments.

e.g. : For SEZ, BIG 2020 includes investment only for internal infrastructure and not investments in manufacturing units. Whereas the MOUs includes investments for infrastructure as well as investment in manufacturing units.

12. ISSUES HAVING CROSS SECTORAL IMPACT

This chapter identifies some issues that cut across departments and are critical for most projects in the shlef. These issues come to the forefront as the implementation of the projects progress. If not adequately addressed these can potentially derail the BIG 2020 agenda or significantly effect its outcome.

- Land management for development
- Building capacity with the government to manage a high volume of projects
- Financing for the BIG 2020 shelf of projects.

12.1 Land management for development

Land acquisition for industrial and infrastructure development has always been a contentious subject. The proposed initiatives for industrial development in setting up Special Economic Zones, Special Investment regions, and infrastructure projects like power plants, ports, and roads require substantial quantities of land to be acquired. The demand-supply analysis in most of the sectors has inferred that land will be a crucial resource that will need to be managed.

Large parcels/quantities of land are required for the development of an industrial park, SEZ, power plants, townships, etc. land is also required as part of a Right of Way for constructing an expressway or rail link. Various laws and procedures allow a Government Agency to acquire land for such uses and for public purposes. However, these acquisitions are a source of tension and delays that potentially derail projects and have a significant impact on growth and development.

This is a risk that needs to be managed. This section deliberates on the current practices adopted by Gujarat for acquiring land for development followed by an analysis of the various classes of issues that normally delays the process. The section will also analyse some best practices used in acquiring urban and rural land and build concepts for discussion on the issue of land acquisition. These will form the basis for further deliberation prior to the preparation of the Draft Final Report and finalisation of some alternative methods that can be adopted.

12.1.1 Processes adopted by Gujarat for acquiring land

Primarily, two processes have been adopted by the Gujarat Government for appropriation of land for development purposes – land acquisition and land pooling. Land Acquisition is carried out under the Land Acquisition Act (LAA), while Land Pooling is carried out using the provisions relating to Town Planning Schemes in the Gujarat Town Planning and Urban Development Act (GTPUDA). While the LAA can be used in both urban and rural areas, the Town Planning Scheme can be prepared only in an urban area, to be more precise, in a Development Area designated under the provisions of GTPUDA.

The LAA enables the government to acquire privately owned land for a bonafide public purpose. While the government can initiate land acquisition for a public purpose directly through the LAA, the process can also be initiated through the provisions of other legislations such as the Gujarat Industrial Development Act (GIDA) or the GTPUDA. For example, if lands are required for an industrial estate, to be established by the Gujarat Industrial Development Corporation, then the acquisition process would be initiated through the relevant provisions of GIDA. If lands were required for the development of a major urban road, which is proposed in a Development Plan sanctioned under GTPUDA, then the acquisition proceedings would be initiated under the relevant provisions of that Act. In any land acquisition process, the Government retains the option of a negotiated purchase, subject to conditions that ensure a reasonable price.

The mechanism of appropriating land under the Town Planning Scheme provision of GTPUDA is structurally different from the land acquisition process. In the land acquisition process, a specific quantum of land in a specific location is marked out for acquisition. In a Town Planning (TP) Scheme, parcels of land to be acquired for a public purpose are carved out from a pool of land. An area (usually about 100 hectares in area) is marked out for preparing the TP Scheme. All plots in the Scheme area are considered merged into one entity during the planning process. An equal proportion of land is deducted from each plot of land for creating roads, open spaces and plots for public purposes. The remaining land is then reallocated proportionally to the original plot owners in the form of “final plots”. Care is taken to ensure that all final plots have access from a proper road, have a proper shape and are located with similar location advantages as the original plot. In a properly structured tabular format, the value of each property is assessed and the amount due to the owner for the land deducted is also estimated. This is adjusted against a portion of the estimated value gain from the implementation of the TP Scheme.

The entire planning and implementation of the TP Scheme is carried out in a highly participatory process. The beauty of the TP Scheme mechanism is in the equitable manner in which both the load of development (land acquisition) and the gain from development (rise in land value) are distributed across all lands in the scheme. This is a highly successful practice in urban areas of Gujarat, but the principles have not been applied to other domains of land appropriation so far.

12.1.1.1 Issues in land acquisition

In recent times, the opposition to land acquisition has increased dramatically. While earlier, the delay in acquisitions resulted from lengthy litigation, now the opposition acquires a highly political character, stalling acquisition processes completely. While earlier, the opposition resulted in delays in the acquisition of individual land parcels, creating spatial discontinuities, now entire groups of affected land owners come together in highly organized resistance. The reasons for opposition can broadly be grouped under the following heads:

12.1.1.2 Discontent with the compensation

Historically, land acquisition has been carried out to the disadvantage of the landowner in terms of the valuation of land. The main reason for this is the practice of undervaluing land during normal sales transactions, thus depressing recorded values far below real market value, affecting official valuations, which rely on transaction records to establish current value. To some extent, this is being addressed

through the “Jantri” which indexes land values in an area, and which is nowadays adjusted for the anomaly in recorded value. The time taken by the government establishment to release compensation payments is an additional issue.

12.1.1.3 Displacement – physical, social and economic

In most cases of large-scale land acquisition, the affected population consists largely of farmers, who are heavily dependent on the land for livelihood. They also have a strong emotional bond with the land, with the region, and their kith and kin in the area. These issues of displacement are often not addressed with adequate sensitivity in the acquisition process. Rehabilitation schemes tend to be viewed with suspicion.

12.1.1.4 Inequity in cost and benefit

Almost all development projects result in a general rise in economic value of the land in the area surrounding it. Thus those who are displaced by land acquisition lose their land and livelihood, bearing the “cost of development” while their lucky neighbours get the “benefits of development.”

12.1.1.5 Lack of opportunity to participate in the development process

Most often, the only opportunity to participate in the development for which the land is acquired is limited to some low-level salaried jobs. Development projects rarely include in their design, a proactive approach to include the displaced landowners in the spin-offs of the development project.

All the above points get magnified and multiplied in public perception in the emerging scenario of a zealous information and communication media. Today, people are acutely aware of real estate market operations, rapid rise of land values surrounding a development project, etc. Therefore land acquisition is perceived as equivalent to colonization by market forces.

12.1.2 Some best practices

The most accessible and adaptable best practice that Gujarat needs to look at closely is the land pooling mechanism used in Town Planning Schemes. While the current legal framework and the design of the mechanism is intended for use in an urban context, the underlying principles of equity, fairness and participation lend themselves to application in any context. The basic principles have been described earlier in this section. The key elements are :(1) to spread the cost/ load of land acquisition over a larger number of landowners and (2) to provide an opportunity for all affected land owners to stay on in the area and participate in the economic benefits of development.

Another model that has attracted attention in recent times is best illustrated with the Magarpatta Township project in Pune. Here, a modern township has been built by 120 farmers by pooling their 400 acres of land. The township is located 7 km from Pune. The landowners hold non-transferable ownership rights, cultivation rights and receive royalty in perpetuity from the companies that use the IT park, office, hospital and other buildings in the township. This not only assures them of a sustained income, but the non-transferability of the land eliminates real estate speculation. The key driver in Magarpatta was one of the farmers who took leadership in organizing the whole group. In a different context, it is not inconceivable for the government to facilitate such a process.

12.1.3 Suggested alternatives for discussion

Alternative approaches to land acquisition can be conceived, incorporating one or more of the following key principles to address the commonly encountered issues:

1. Distribute the load of land acquisition over a larger area and larger number of landowners, thus avoiding the situation of completely displacing anyone. This implies some form of land pooling or in other words, receiving land in lieu of land as compensation. The land given as compensation may be smaller in extent, but higher in value.
2. Ensure that the system of valuing land that is acquired takes into account the commonly prevalent anomalies in land valuation.
3. Ensure that compensation is paid on time.
4. Create tangible opportunities for all affected land owners and their families to participate in the economic benefits of the development project for which land is being acquired.
5. Ensure that information asymmetry or worse, information arbitrage, do not occur in the process of delineation and acquisition of land.

The exact methods used need to be calibrated to the nature and extent of land acquisition. An attempt is made here to initiate development of a policy framework by categorizing land acquisition situations and their implications with respect to operationalizing the principles listed above:

1. Right of Way acquisition for networks that add value all along their length.

a. Example – roads, canals

b. Approach to land pooling/ rehabilitation should factor in the possibility of displaced land owners gaining value from proximity to the asset created.

2. Right of Way acquisition for networks that add value at nodes along the network

a. Example – railway lines, power/gas networks

b. Approach to land pooling/ rehabilitation should factor in the possibility of displaced land owners gaining value from proximity to the nodes on the network created

3. Acquisition for large transport infrastructure terminals, large-scale industrial development (manufacturing), etc.

a. Opportunities for establishment of support services are created within and immediately surrounding the project area as well as along the major connecting corridors.

b. Approach to land pooling/ rehab should factor in the possibility of displaced land owners gaining value from getting alternate land in locations such as above.

4. Acquisition for large-scale developments for IT, service industries, etc.

a. Such economic activities typically have high multiplier effects, which are felt in a large area within commuting distance.

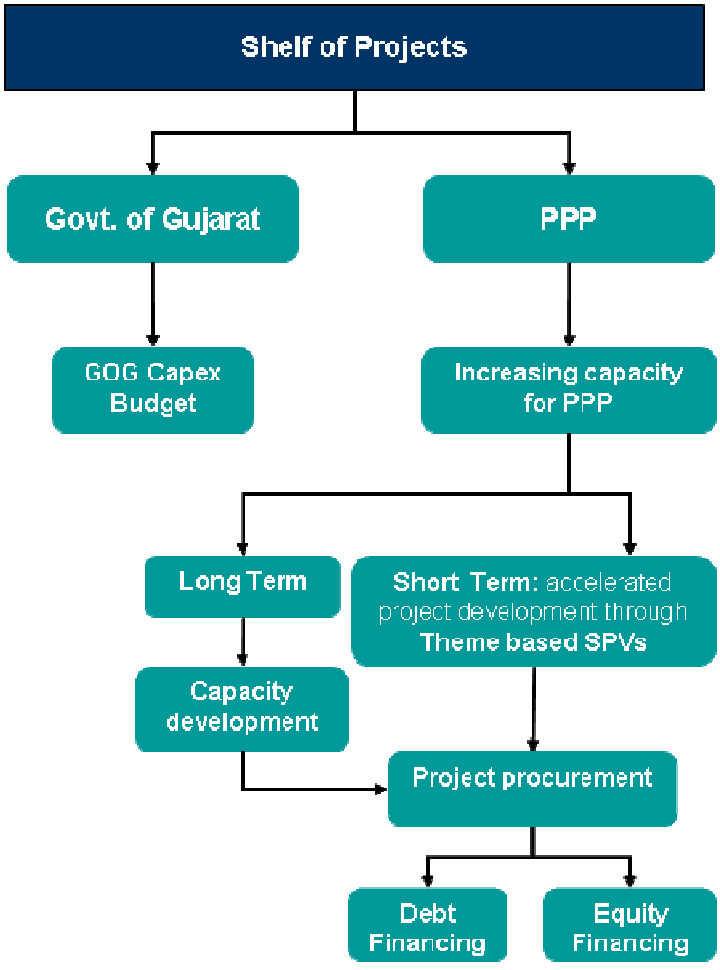
b. Approach to land pooling/ rehabilitation could be based on an area development basis.

c. In such cases, large residential populations can be expected to shift in over a fairly short period of time. Therefore, the possibility of displaced farmers shifting to farming/food production/food processing, etc. with appropriate support and facilitation is also a strong possibility.

The ideas listed above and more need to be further explored in a systematic manner. The Government is fully seized of the importance of this and is taking definite steps in the direction. Recent press reports talk about acquisition of 64,000 hectares to the land already with it for the development of industries and infrastructure.

12.2 Development and financing of the shelf of projects

The proposed shelf of projects in Big 2020 is large at around US $ 200 billion. A large percentage of shelf of projects (79%) is to be developed through the PPP route. Development and financing of these projects will be a challenge despite the fact that the Government of Gujarat already has a demonstrated track record in attracting PPP in the areas of ports, roads, railways, SEZs, City Gas Distribution, Power projects etc.



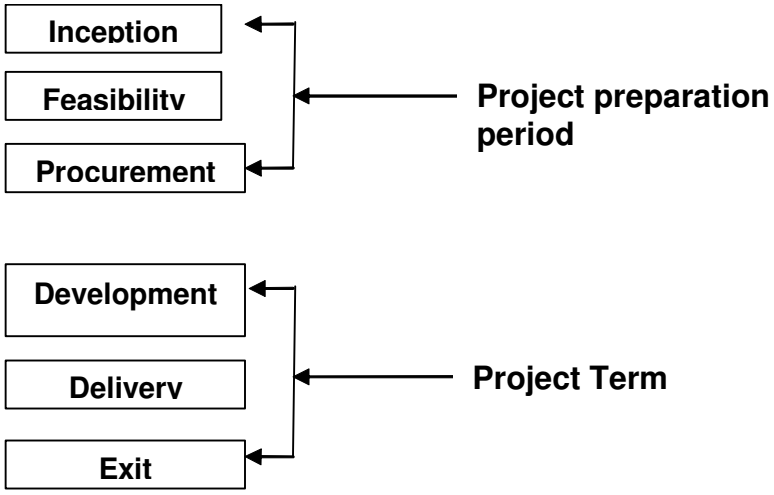
The volume and size of projects envisaged are much larger than in the past and will need a break away approach for its successful implementation. There is a pressing need to substantially increase the capacity for handling PPP projects. The chart below indicates the streams for development and financing a project in the shelf for PPP projects. The subsequent sections deal with the challenge of project development and financing.

12.2.1 Building capacity within the government to manage a high volume of projects

The ambitious plans under the revised Big 2020 envisages an investment of more than Rs. 860,000 crores, Underlying the investment is the need to conceptualise and implement a large number of projects. If the average cost of a project is assumed at Rs. 100 crores, then the number of projects in the shelf would amount to 8600 projects. This is just to highlight that the number of projects would be large and the capability to handle these through the entire projects value chain would pose a challenge. A comparision with the number of PPP projects developed in the past would highlight this point. The project life cycle for an infrastructure project is anywhere between three to five years from project inception to project commissioning. Successful implementation of the shelf of projects would require a large number of projects to be in various stages of a project life cycle, which includes project feasibility, project procurement, financial closure, construction and commissioning.

A typical project development cycle is presented below:-

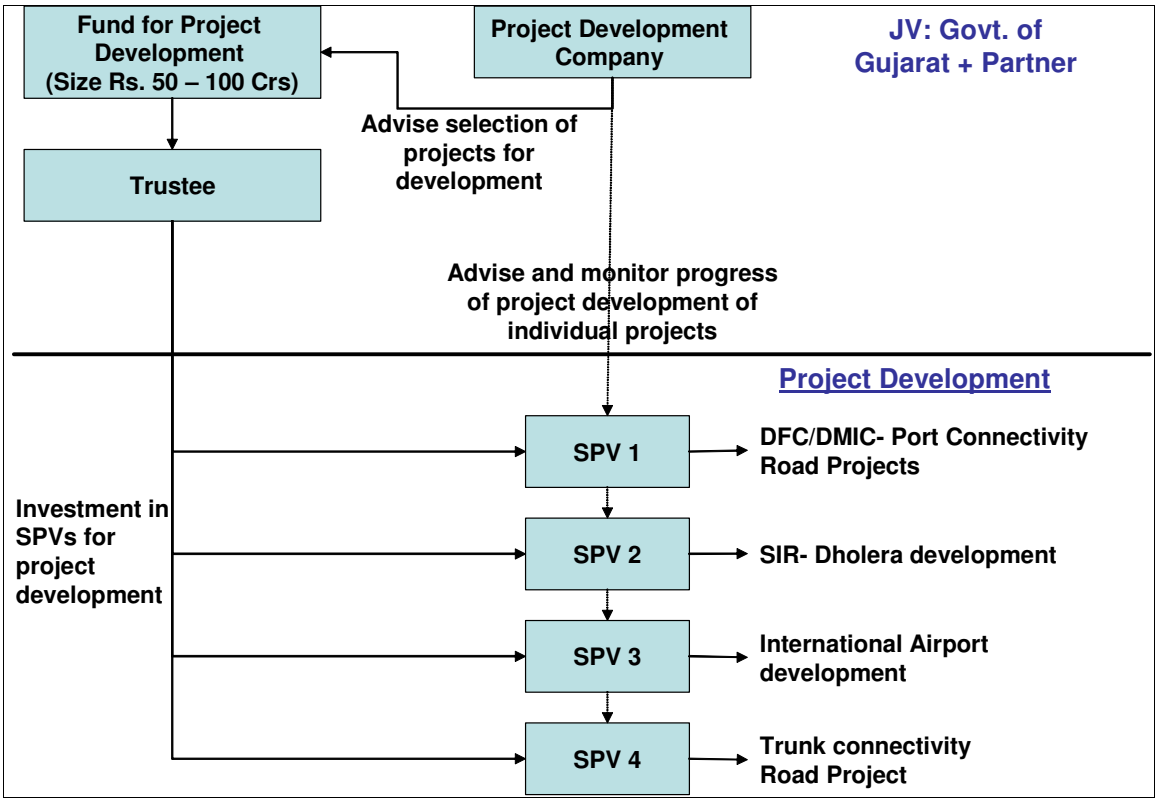
Exhibit 12-1: Project development cycle



The inception phase of a project in the project development cycle requires that the sector structure be favourable for investments and that projects are anchored on a sound economic rationale. Projects need to be prepared in terms of pre-feasibility studies, planning for linkages, identification/availability of land and an approach to Rehabilitation & Resettlement (R&R) wherever applicable. Inadequate investment in feasibility studies is often a reason for lack of response from private sector developers. Project procurement, often through a competitive bidding process, is the key to ensuring high-quality participation

and obtaining competitive terms. In many cases, an improper pre-qualification process leads to a mixed bag of bidders (strong and weak) competing for the project and often generating outcomes, which are speculative. Another important area of procurement is the definition of commercial contracts. Contracts need to be well thought out and finalised in discussion with potential developers. The absence of well thought out, bankable contracts have often led to protracted negotiations after the selection of the bidders.

The project implementation phase requires minimising of multiple interfaces for clearances and approvals from various Departments at the State and local levels. This can often lead to project delays. Developing the bandwidth and capability within the various Departments of the Government of Gujarat to handle a large number of projects through the project inception and development cycle would be critical for the successful implementation of the Big 2020. However at present this capability is at different levels in different Departments. A well thought-out programme for developing this capability is necessary and would need to be undertaken as a 3-5 year initiative.



Doing theme based JVs for project development with numerous partners will bring about a competitive play amongst the different themes and accelerate the implementation of the BIG 2020 shelf. It will also enlarge the understanding about the plans of the State with a number of Infrastructure financiers. The illustration below shows how a theme based SPV for project development could evolve.

12.2.2 Financing of BIG 2020 projects

Both equity and debt financing of projects for the scale envisaged in the Big 2020 will be a challenge. While institutions exists both for equity and debt financing, Government of Gujarat will need to undertake special initiatives both to catalyse the flow of financing to its projects as also to bridge the gap wherever possible.

Equity financing:

Equity for a project is made-up from various sources. It comprises of promoters contribution, contribution from financial sector players such as private equity, venture funds etc. and through access to the capital markets. While access to capital markets will continue to be a source, it is normally available when the project is substantially implemented. Most private equity players are willing to support promoters of infrastructure projects early on in the development process in the hope that they could exit with substantial gains at a later date when the project company accesses capital markets through an IPO or through other forms of equity raising. In order to support the access of the shelf to a variety of alternative sources of equity, Government of Gujarat could consider setting-up of a private Equity Fund for the purpose. The private equity fund could provide the equity capital to a project in the earlier part of the project and could be a means to catalyse other means of equity financing into the project. It could at a later date exit at a premium and invest in fresh opportunities. While details of such private equity fund would need to be studied, it could typically be the trustee/asset management company structure that prevails. The asset management company would appraise infrastructure projects from a equity stand point and recommend investments. While the equity requirement for the shelf of projects is large and while it is not the intention to provide any significant part of this equity, the role of catalysing equity investments to the project could be effectively played by a corpus of about US $ 1 billion (Rs. 4,000 to Rs. 5,000 crores). While this amount is subjective, it is drawn from the fact that most Private Equity Funds that are being set-up in the emerging market infrastructure financing space are of US $ 1 billion and above.

Debt financing:

It is expected that in the current year, bank credit from the Indian banking sector will fall considerably short of the need for capacity creation as also ongoing working capital financing. Going forward, this shortfall is expected to widen, given the fast growth of the Indian economy.

The banking industry follows prudential regulatory norms in terms of permissible lending limits to a company, group and industry. It is likely that most banks in the industry have limited headroom for lending to large projects given prudential norms and the historical lending sitting on their balance sheets. Government would need to intervene in creating an environemnt for making debt finance available financing for key projects.

12.2.3 Current financial crisis and the financing of BIG 2020 projects

The effect of the financial meltdown in the western world is already being felt in India. In the early stage of the problem there was a liquidity crisis. The financial sector had stopped lending thereby effecting even

ongoing operations. Over a period of time and as a result of a number of measures taken by the RBI the liquidity crisis seems to be receding. However a crisis of confidence still persists. This is driven by the macro- economic uncertainties and the unwillingness of Banks to undertake new exposures under the circumstances. The macro- economic uncertainty is clearly reflected in the frequent downward revision of the outlook on India's GDP. This has had a number of ramifications on the Infrastructure Development & Financing space. Developers who were normally very optimistic and keen to undertake new projects have become cautious. Most developers of Infrastructure projects are adopting a wait and watch attitude to new projects. Their greater worry is to get the existing projects under implementation financed. No new projects are being planned. Financiers of infrastructure projects reflecting the caution of the times are sparingly releasing the funding for approved projects. Approved projects are being reviewed frequently for signs of deterioration of viability. New project financing seems to be on hold. It will be difficult to predict a timeline by when the situation will return to pre crisis levels of activity.

Given this situation it is important to assess its impact on the BIG 2020 agenda. Clearly this is a good time to accelerate project development and to prepare projects so that they are ready for private sector participation and financing when the markets return to normalcy. In that context the recommendation of broadening the bandwidth for project development through multiple SPVs is important. It may also be important for GoG to closely review the projects under implementation during the period 2009 & 2010 and to provide the financing on selective basis so as to maintain the momentum of the Agenda.

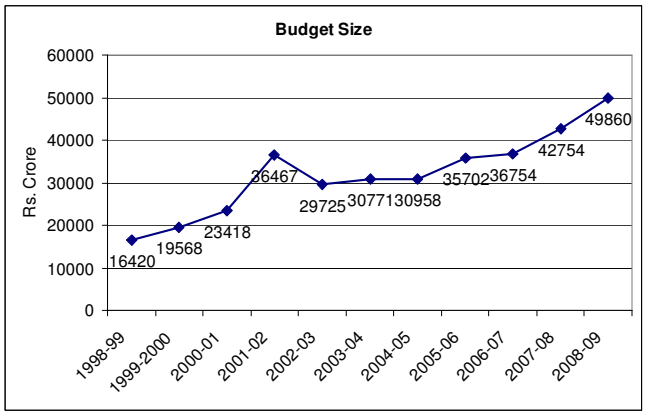
13. OVERVIEW OF STATE FINANCE

This section provides an overview of the financial status of Gujarat Government. It analyses the revenues and expenditures of the state government along with trends in developmental and non-developmental expenditures. The analysis has been made for financial years 2003-04 to 2007-08. This analysis will be followed up with discussions with the Finance Department along with the capital expenditure projections from the shelf of projects.

13.1 Budgetary position

Gujarat Government has a budget of Rs. 49860 crore in 2008-09. The budget has grown at CAGR of 13 percent over the last five years. A revenue surplus budget of Rs. 52.39 crores has been proposed this year and the overall budgetary deficit is Rs. 876.2 crores.

Exhibit 13-1: Budget size



The revised estimate for 2007-08 indicates a revenue surplus of Rs. 2339.64 crores and the fiscal deficit is Rs. 5101.83 crores. The state government has implemented Gujarat Fiscal Responsibility Act 2005 (GFRA) under which efforts are being made to achieve revenue surplus and limit fiscal deficit within a range[10] of 3% of fiscal deficit. The fiscal deficit was 2.22 percent of GSDP in 2006 – 07 as against 5.44 2003 –04

13.2 Revenues

The revenue sources comprise of state government revenues and transfers from the Central Government.

13.2.1 Total receipts

The total receipts are an aggregation of Consolidated Fund of the State and balance from the Public Account. The Consolidated Fund comprises of revenue receipts, public debt and recovery of loans. The total receipts have grown by 2% during the 2003 – 07. This has been in the backdrop of reducing public

[10] Reduce fiscal deficit to not more than three per cent, of the estimated Gross State Domestic Product within a period of four years commencing from 1st April, 2005 and ending on the 31st March, 2009

debt and increased revenue receipts of the state government. The revenue receipts have grown at a healthy rate of 18% CAGR during the period 2003-04 to 2006-07.

Exhibit 13-2: Receipts

Rs. Crore

Year	Revenue receipts (RR)	Public debt	Recovery of loans	Consolidated fund (CF)	Net Public Account	Total
2003-04	18247	22169	200	40616	-624	39992
2004-05	20265	16401	186	36852	1157	38009
2005-06	25067	10671	1783	37521	-3108	34413
2006-07	31002	6951	798	38751	20	38771
2007-08 (RE)	34979	8681	200	43860	-200	43660

Source: GoG Budget

13.2.2 Receipts on revenue account

The Revenue Receipts comprise of State's own revenue receipts and share in taxes of the central government. The central tax devolution is determined by the Finance Commission and the Twelfth Finance Commission (TFC) has awarded 3.569% of sharable tax excluding service tax and 3.616% of the sharable service tax to Gujarat as against the Eleventh Finance Commission award of 2.821% and 2.858% respectively.

Exhibit 13-3: Receipt on revenue account

Rs. Crore

No.	Item	2003-04	2004-05	2005-06	2006-07	2007-08(RE)	2008-09(BE)	CAGR (2003-04 to 2007-08)
I	**Tax Revenue (A+B)**	**13138.91**	**15177.00**	**19070.54**	**22890.58**	**26682.54**	**29699.60**	19%
A	Share in Central Taxes	1957.82	2220.68	3372.90	4425.83	5210.00	6050.00	28%
B	State Taxes	11181.09	12956.32	15697.64	18464.75	21472.54	23649.60	18%
II	**State Non-Tax Revenue**	**3271.96**	**3090.49**	**3353.37**	**4948.78**	**4503.30**	**4458.59**	8%
III	**Other Revenue-Grant in aid and contribution from central government**	**1836.65**	**1997.45**	**2642.96**	**3162.86**	**3793.36**	**4119.93**	20%
	TOTAL (I+II+III)	**18247.52**	**20264.94**	**25066.87**	**31002.22**	**34979.20**	**38278.12**	18%

Source: Budgeted documents of GoG

The total receipts on revenue account have grown by CAGR of 18 percent during the assessment period. The own tax revenues of the State has grown at CAGR of 18% as against a GSDP growth rate of 15.8% the assessment period.

Exhibit 13-4: Composition of states' own revenue

Own tax revenues	2003-04	2004-05	2005-06	2006-07	2007-08 (RE)	Annualized growth rate
Professional tax	99	132	119	131	140	7.8%
Land revenue	127	235	380	499	450	36.5%
Stamps & registration	825	963	1153	1425	1590	19.6%
State excise	46	47	48	42	44	-1.3%
Sales tax (now VAT)	7170	8309	10562	12817	15380	19.7%
Motor vehicle tax	936	1061	1154	1191	1300	10%
Taxes on goods and passengers	172	160	157	6	151	68.9%
Electricity duty	1592	1829	1900	2088	2090	8.6%
Entertainment tax	41	51	44	28	35	-2.6%
Other tax	173	169	181	238	293	15%
Total - Own tax	11181	12956	15698	18465	21473	17.6%

Source: Bureau of Economic and Statistics

Value Added Tax that contributes 71.6% has grown steadily at 19.7% during 2002-03 to 2007-08 (RE). Land revenue has grown by 5.25 times. Revenues from Stamps & Registration and Motor Vehicles Tax have also shown good growth rates.

However, there has not been much growth in non-tax revenues for the State. This indicates low cost recovery from publicly provided economic and social services and low royalties charges on crude oil, natural gas and lignite.

Exhibit 13-5: Composition of states' non tax revenue

Non tax revenues	2003-04	2004-05	2005-06	2006-07	2007-08(RE)
Fiscal services including interest receipts	927	506	271	638	305
General services	298	407	406	1176	826
Social services	195	182	235	323	349
Economic services	1852	1996	2441	2812	3023
Total Non-tax revenues	3272	3091	3353	4949	4503

Source: Relevant budgeted documents of GoG

13.2.3 Receipts on Capital Account

Receipts on capital accounts comprises of debt, recovery of loans and other receipts. In the assessment period there has been a substantial reduction in public debt of the Government. The total receipt on the capital account was 13.31 percent of GSDP in the year 2003-04 is now 3.04 percent in the year 2006-07.

Exhibit 13-6: Composition of capital receipts

Sr.	Item	2003-04	2004-05	2005-06	2006-07	2007-08(RE)	2008-09(BE)	CAGR (2003-4 to 2007-08)
I	**Public Debt (A+B)**	**22,168.86**	**16,401.00**	**10,663.18**	**6,948.30**	**8,680.71**	**10,455.21**	-21%
A	Internal Debt of State Govt.	19,164.81	14,582.88	9,940.9	6,653.50	8,401.21	10,031.14	-
B	Loans & Advances from Central Govt.	3,004.05	1,818.12	722.28	294.80	279.50	424.07	-
II	**Recovery of Loans & Advances**	**181.60**	**180.20**	**1,783.69**	**797.59**	**200.00**	**250.65**	2%
III	**Other Receipts**	**17.95**	**5.90**	**7.94**	**2.69**	**0.01**	**0.01**	-85%
	TOTAL (I+II+III)	**22,368.41**	**16,587.10**	**12,454.81**	**7,748.58**	**8,880.72**	**10,705.87**	-21%

Source: Relevant budgeted documents of GoG

13.3 Expenditures

Expenditures have been classified into capital and revenue expenditure. Capital expenditure indicates public investments that create public assets and accelerates private investment. This is especially important in the context of increased infrastructure expenditures contemplated by the Gujarat Infrastructure Agenda.

13.3.1 Expenditure of Revenue Account

The expenditure on revenue account comprises of developmental and non-developmental expenditure. The developmental expenditure on social and economic services has been growing at CAGR of 13 percent and 9 percent respectively. The CAGR of non-developmental expenditure was 10 percent during assessment period. The expenditure on revenue account is 11.5 percent of the GSDP in the year 2006-07. The Revenue Expenditure has grown at 10% for the assessment period as against a growth in revenue receipts of 18%.

Exhibit 13-7: Composition of revenue expenditure

Rs. Crore

No.	Item	2003-04	2004-05	2005-06	2006-07	2007-08(RE)	2008-09(BE)	CAGR (2003-04 to 2007-08)
I	Developmental expenditure (A+B)	12,680.16	14,204.47	14,149.06	17,136.48	19,275.89	22,573.98	11%
A	Social services	7,075.67	7,850.93	8,272.87	10,514.31	11,338.79	13,726.79	13%
B	Economic services	5,604.49	6,353.54	5,876.19	6,622.17	7,937.1	8,847.19	9%

Rs. Crore

No.	Item	2003-04	2004-05	2005-06	2006-07	2007-08(RE)	2008-09(BE)	CAGR (2003-04 to 2007-08)
II	Non developmental expenditure	9,173.99	9,954.02	11,208.38	11,963.23	13,216.17	15,604.44	10%
III	Other expenditure	99.98	143.31	108.05	132.42	147.5	101.21	10%
	Grand total (I+II+III)	**21,954.13**	**24,301.8**	**25,465.49**	**29,232.13**	**32,639.56**	**38,279.63**	**10%**

Source: Relevant budged documents of GoG, Bureau of Economics and Statistics

13.3.2 Expenditure on Capital Account

There has been an overall decline in capital expenditure. This has been through a 36% reduction in non developmental income and increased development expenditure of 18% for the period of assessment.

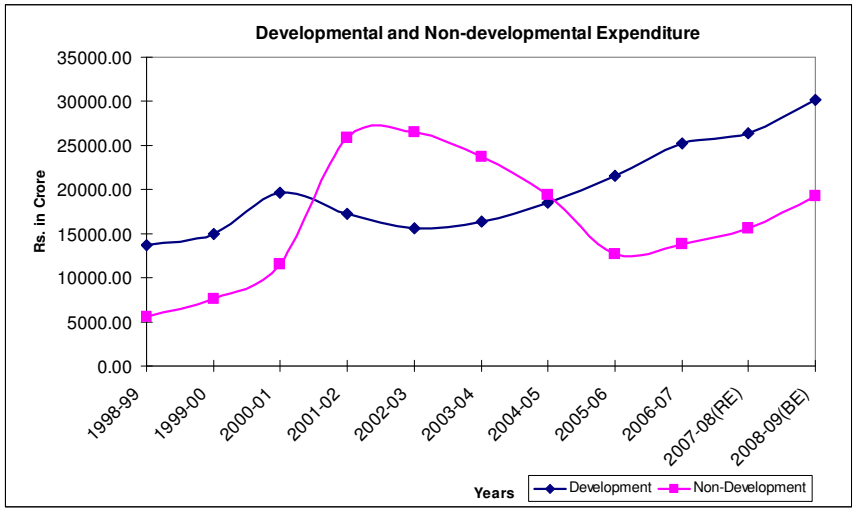
Exhibit 13-8: Composition of capital expenditure

Rs. Crore

No.	Item	2003-04	2004-05	2005-06	2006-07	2007-08(RE)	2008-09(BE)	CAGR (2003-04 to 2007-08)
I	Development Expenditure (A+B)	3640.93	4334.51	7346.29	8147.19	7148.46	7548.23	18%
A	Social Services	1236.83	1452.68	1822.06	1607.52	1993.74	2213.38	13%
B	Economic Services	2404.10	2881.83	5524.23	6539.67	5154.72	5334.85	21%
II	Non Developmental Expenditure	14551.81	9392.83	1444.99	1842.80	2376.23	3681.22	-36%
A	General Services	16.94	30.30	17.15	8.94	83.85	191.86	49%
B	Public Debt	12556.50	8887.56	1128.40	1770.90	1860.94	3159.36	-38%
C	Loans & Advances by the State Govt.	1978.37	474.97	299.44	62.96	431.44	330.00	-32%
D	Other Expenditure	0.00	0.00	0.00	0.00	0.00	0.00	-
	TOTAL (I+II)	**18192.74**	**13727.34**	**8791.28**	**9989.99**	**9524.69**	**11229.45**	**-15%**

Source: Relevant budged documents of GoG, Bureau of Economics and Statistics

Exhibit 13-9: Trends in developmental and non-developmental expenditure



13.3.3 Public debts[11]

The gross public debt of the state was Rs. 72154 crore in March 2007, about 28.35% of the GSDP. The central government debt has reduced to 15.2% of the total debt from 19.9%. There has been a significant change is in ratio of Small Savings loans which accounts for 60.9% of total debt as compared to 52.5%.

As per the recommendation of the 12th Finance commission the state will be eligible for debt restructuring of Rs.9437 crores as the state government is working towards achieving the targets in Gujarat Fiscal Responsibility Act (GFRA), 2005 and Gujarat Fiscal Responsibility Rules, 2005. This will ensure prudent fiscal management and fiscal stability through progressive elimination of revenue deficit, sustainable debt management consistent with fiscal stability, greater transparency in fiscal operations and to chart the course of fiscal policy in a medium term frame work.

In the year 2006-07 the state's finances reported revenue surplus of Rs. 1770 crore as compared to revenue deficit of Rs. 399 crore in 2005-06. State has received total debt waiver of Rs. 846.05 crores during the year 2006-07, which includes Rs. 315.89 crores for the year 2005-06, Rs. 471.87 crores for the year 2006-07 and Rs. 58.29 crores for the period of the Eleventh Finance Commission.

13.3.4 Guarantees[12]

The contingent liabilities on account of outstanding guarantees has shown significant reductions over last few years as state government has capped issuance guarantees[13] in order to implement FRBM act. The

[11] Website of Finance department, GoG

[12] Website of Finance department, GoG

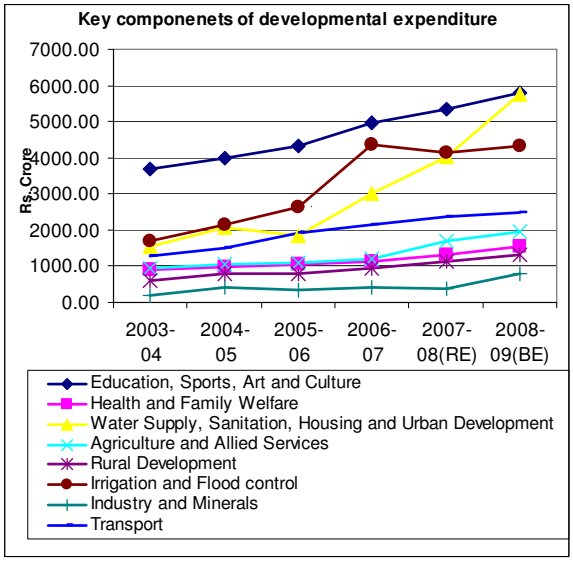
total outstanding guarantees has reduced to Rs. 12,550 crores in March 2007 from Rs.17,625 crores in the previous year. The state Government has also steadily augmented its Guarantee Redemption Fund (GRF) and aggregated to Rs. 1420.21 crores as on December 2007. It has provisioned about Rs.100 Crore towards this fund 2008-09 budget.

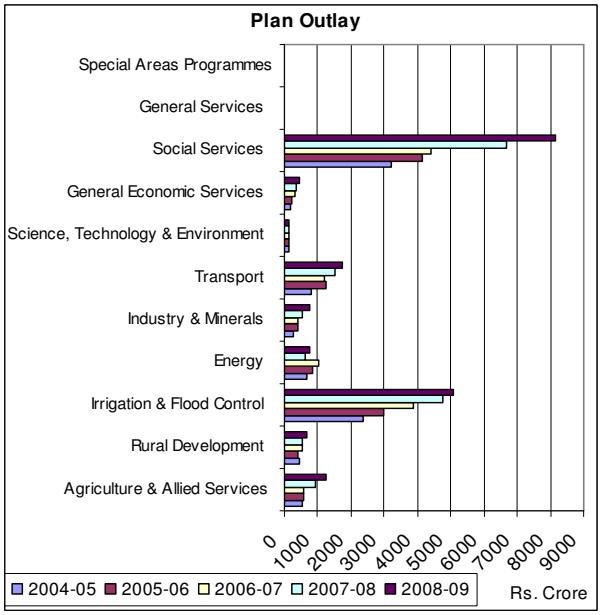
13.4 Trends in developmental expenditures and plan outlays

The analysis of development expenditure for the last five years indicates increased spending on social sectors. The expenditure on education, sports and allied activities has grown by 10 percent CAGR during the assessment period. Steep expenditure increment of 27 percent has been observed in the water supply, sanitation, housing and urban development, there has been a growth of 12 percent on welfare of scheduled castes, scheduled tribes and other backward classes. The development expenditure on agriculture and allied services has grown at the 16 percent alongwith a 17 percent growth in rural expenditure.

The Eleventh Five Year Plan of the state Government aims at "Faster and More Inclusive Growth". The Government plans to allocate higher resources to health, education, and agriculture and poverty alleviation - in line with its strategy of improving the Human Development Index.

Exhibit 13-10: Trends in development expenditure and plan outlay





[13] Article 293 of the Constitution of India provides for the borrowings of the State and guarantees given on the security of the Consolidated Fund of the State. Gujarat State Guarantees Act, 1963 provides the frame work for fixing the limit of the executive power of the State regarding the giving of guarantees. The State Legislature decides such limits from time to time. As the limit is against the security of the Consolidated Fund, the practice followed so far has been to keep the limit below the level of Consolidated Fund of the State. At present (with effect from March 2001) the limit for sanctioning of Guarantees is Rs. 20,000 Crore. As against this limit, the outstanding Government Guarantees, as on March 31, 2007 stood at Rs. 12550.66 Crore.

13.5 Overall assessment and implications on funding the Gujarat infrastructure agenda

The state Government has achieved substantial improvements in its budgets. It has implemented the Financial Responsibility Act – 2005 and has converted itself from a revenue deficit state to a surplus one.

There has been buoyancy in the tax collections of the state. This is about 300 basis points over the GSDP growth rate. However non tax receipts have not displayed similar buoyancy.

The revenue expenditure has been growing at a lower rate than the revenue income.

There has been a steady reduction of public debt by the state government.

There has been a reduction in the capital expenditure. These reductions have been more for non development expenditures and there has been substantial increase in development expenditure.

On the overall the state is at a good fiscal situation and has the appetite to fund increased capital investments if required.

The Shelf of projects indicates substantial investments from the state government till 2020. The Government will need to be prepared with a larger share of funding in the period 2009-10 given the crisis in the global Financial sector.

14. GOVERNMENT OF GUJARAT ACTION AGENDA

The Volume III of the report covers the Action Agenda. The following are the list of actions that will need to be executed at the state government level:

1. Forming an Infrastructure Action Agenda Subcommittee reporting to the Gujarat Infrastructure Development Board. This sub committee will be the custodian of the BIG 2020 report and the infrastructure action agenda. Their responsibilities shall be as under
    - Monitor and review the implementation of the infrastructure action agenda
    - Institutionalise state government funding for projects as part of five year planning exercise
    - Monitor evolution of the Themes and recommend actions for implementing it through state level and department level actions.
    - Facilitate and nurture actions flowing from the Infrastructure Action Agenda
2. Forming theme based SPVs for expanding the bandwidth for undertaking the high priority projects.

    Gujarat Industrial Corridor Company is one such company that is responsible for precipitating benefits of the DMIC. Many such SPVs could be formed for ensuring key projects are undertaken. These theme SPVs could be supported by forming a Development Fund managed by Infrastructure Action Agenda Sub committee and partnering with the project development companies in the private and financing sectors.

    - Form a project development fund under the Infrastructure Action Agenda Sub committee
    - Form project development companies for DFC/ DMIC – port connectivity projects, SIR Dholera development, Greenfield international airport etc.
    - Invite expression of interest from Private sector, project development companies as well as consultants for project development and implementation
    - Operationalise the company and monitor project development
3. Set up a private equity fund of Rs. 4000 to Rs. 5000 crores. This fund would invest in the equity of infrastructure projects in the early stages of implementation. Its role would be to catalyse other sources of equity funds to the projects. This is not project development funding but applied once a private developer has started the implementation process. The equity invested in the early stages of implementation can be divested at a later stage at a premium.
    - Create the equity fund, employ requisite expertise to evaluate projects and manage it.
    - Invite participation from other private equity funds/ venture funds

- Operationalise the Private Equity Fund

4. Appoint consultants for increasing the capacity of GIDB. These consultants could be employed in a range of activities covering project initiation, project development, vetting of project documents, assessing completeness of project development activities and recommending projects for PPP and government support, if any to the GIDB

5. Modify the Gujarat Infrastructure Development Act, 1999 (GID Act 1999) to appoint developers through direct negotiations for specific projects where competitive bid process has failed to attract PPP developers. Similar provision is part of the Andhra Pradesh Infrastructure Development Enabling Act 2001.

   The GID Act provides for dispute resolution for PPP projects through concession agreement. The act may be strengthened to create an institution that may resolve disputes arising in PPP projects on a fast track basis. The national legislation in telecommunications provides one model of how such process and institution can be created that leads to a quicker and more efficient process of settling disputes. Legislation could also establish alternative dispute resolution procedures that could be used to efficiently settle disputes between parties.

6. Form a central government task team; the responsibility of the task team will be to ensure coordination with the Central Government for various projects requiring funds from the central government. These would involve coordination with Indian Railways, Airports Authority of India, Ministry of Tourism, Ministry of Urban Development etc

7. Form task teams in partnership with departments for building efficiency in PPP project bidding. The scope of activities for the task teams for the sectors will be as under:

   - Tried and tested PPP sectors – Power, Gas, Roads, Ports

   These sectors are well developed for PPP across the country. The task team will need to look building capabilities for scaling up project preparation for bidding through developing/ applying model concession agreements, identifying secure revenue streams that could be offered to the private sector for attracting investment. Address policy issues for making projects attractive and viability gap funding models. The task team could also recommend fast track procedures for approving projects by the GIDB. Where departmental band-width is a constraint, use theme based SPVs to accelerate project development.

   - Sectors requiring addressing issues for private sector participation – Townships, Urban sector PPPs, Railway PPPs, Airports, Knowledge, Health, logistics, environment management

   These sectors would require application of various PPP structures. In the case of township models will need to be developed for attracting master developers that anchor township development, theme based townships for health, education etc. In the urban sector there are many service level improvements that would need to be taken up in the urban water and solid

waste management. The task team could apply itself on identifying and implementing revenue implementation reforms that will help municipal corporations for preparing projects for PPP.

- Sectors requiring new skill sets – metro rail, high speed rail connectivity between Mumbai and Ahmedabad, development of tourism circuits, agro infrastructure etc

While the theme based SPVs mentioned above would substantially address these areas. This stage could be a precursor to the formation of the SPV itself. Development of the project concept and bringing it to the stage of formation of SPV could be the role. The activities would involve establishing pre feasibilities, developing an initial business plan and formulating the terms of participation of the private sector developer in the project.

15. DEPARTMENT ACTION AGENDA

The department action agenda is described in detail in the Volume 2 of the report. Each department has a unique set of actions that need to be implemented for achieving the desired goals for the sector. Essentially these actions flow from issues observed in the following areas:

- Expediting the implementation of projects
- Addressing regulatory issues
- Implementing reforms for building efficiencies
- Institutional restructuring for better operating convenience and efficiency

The above actions have to be closely monitored by the departments. The implementation department level agenda is very important as these are building blocks towards achievement of larger state level goals. Considering this, the infrastructure agenda sub-committee may also monitor the implementation of department level action agenda.

15.1 Expediting the implementation of projects

Energy sector – Power, Oil, Gas and Gas works

- Expediting projects under implementation in the Power sector to ensure that the state is surplus in power by 2012
- Ensuring availability of funds for implementing transmission and distribution projects through budgetary support or PPP in developing transmission facilities.
- Ensuring demand side management for the power sector to reduce losses
- Setting up of LNG terminals for augmenting requirement of gas for the state
- Providing city gas distribution networks for about 200 cities

Industrial Parks and Special Economic Zones

- Ensuring industrial promotion goes hand in hand with setting up of industrial estates and SIRs

Road sector

- Creation of Road fund for providing viability gap funding for Road projects.

- Creation of data bank on road condition and introduction of GIS based road inventory management system

Port sector

- Improve port viabilities by targeting higher share of re routable cargo of Northwest hinterland and port specific cargoes
- Implementation of the last mile port connectivity road projects

Rail sector

- Coordinate with Indian Railways for implementing the DFC and DMIC rail connectivity projects
- Take up or pursue IR to develop Ahmedabad, Surat and Vadodara railway stations to global standards

Airport sector

- Implementation of the Greenfield international airport near Ahmedabad
- Promote regional air services to small towns on PPP basis.
- Develop small airports through the PPP model.
- Promote Air Cargo Hubs for handling perishable goods in South and Central Gujarat.
- Improve Air cargo infrastructure at Ahmedabad, Vadodara, and Rajkot airports.
- Address land issue for expansion of existing airports

Water sector

- Develop PPP projects in areas of efficiency improvement

Tourism

- Create a Tourism Development Fund
- Encourage Marketing and Promotion of the State by the Private Sector by developing networks with travel agencies, and hotels.

Education sector

- Undertake a structured market assessment of the emerging trends in manpower demand across sectors

- Develop knowledge corridors and centers of excellence
- Institute pro-active market oriented teacher training institutions

15.2 Implementing reforms for building efficiencies

Energy sector – Power, Oil, Gas and Gas works

- Tariff rationalisation and reduction of cross subsidy in the Power sector.

Industrial Parks and Special Economic Zones

- Develop capacities with department to manage large size industrial projects such as SEZ, SIR, and PCPIR

Road sector

- Identifying alternative revenue streams for the road sector for funding annuity schemes for the SHDP program. Options could involve raising funds through betterment taxes or similar new levies that impact those who directly benefit from road development. Such actions would be expedited.
- Introduce flexible project structuring and provide revenue shortfall support to reduce revenue risk for private developers
- Introduce Performance Based Maintenance Contacts (PBMCs) for key corridors
- Ensure equity participation of developers in port and SEZ linkage projects
- Introduce measures of institutional strengthening for better achievement of road projects through PPP

Port sector

- Introduce port based services to make them globally competitive
- Institutional Strengthening of GMB

Railway sector

- Promoting development of Spur Lines to DFC through PPP for Port linkage

Logistics Park

- Skill development for management of logistic services in the state by partnering with the provate sector and industry players.

Urban sector

- Implement municipal reforms to enhance capacities of ULBs to design, develop, fund and monitor urban infrastructure development projects on their own.
- Benchmark Infrastructure provisioning and delivery
- Support ULBs in implementing projects on PPP basis.

Information Technology

- Develop IT University for increasing the availability of technical manpower for the IT sector

15.3 Addressing regulatory issues

Energy – Power, Oil, Gas and Gas works

- Participating in setting up of a power exchange for trading surplus power
- Resolving policy issues with PNGRB for laying of gas transmission grid across the state

Road sector

- Support the roads department through the proposed Gujarat State Highways Bill

Port sector

- Develop norms for distance between ports and setting up of Captive Jetties

Water sector

- Establishing Water sector regulatory body.
- Rationalisation of tariffs toward economic pricing

Tourism sector

- Support tourism sector through a tourism policy

  Provide incentives to Tourism Projects through capital subsidies for remote locations and tax exemptions for improving project viabilities

- Impart clarity to land and property policy for tourism projects

Education sector

- Develop an education policy on the lines of IT policy for attracting investments for setting up technical institutes in the state through the private sector participation
- Develop education policy for attracting investments for setting up technical institutes in the state
- Develop a policy framework for private sector participation in higher and technical education

Environment infrastructure

- Form a waste exchange and implement various environment projects

15.4 Institutional restructuring for better operating convenience and efficiency

Railway sector

- Strengthen the office of the Director of Rail Operations – Government of Gujarat

Logistics Park

- Form a department of logistics within the Government of Gujarat

Water sector

- Institutional re-structuring – water sector to untangle the current complex institutional structure comprising of multiple agencies and overlapping jurisdiction with many SPVs

Tourism sector

- Strengthen the institutional framework of TCGL

In addition the department action agenda also involves implementation of projects. The key projects profiles distilled from the shelf of projects are detailed in Volume 3 of the report.