



Industries Commissionerate  
Government Of Gujarat

**INDEXTb**  
INDUSTRIAL EXTENSION BUREAU  
A GOVT. OF GUJARAT ORGANISATION  
ISO 9001 : 2000 Certified

**GSPC**

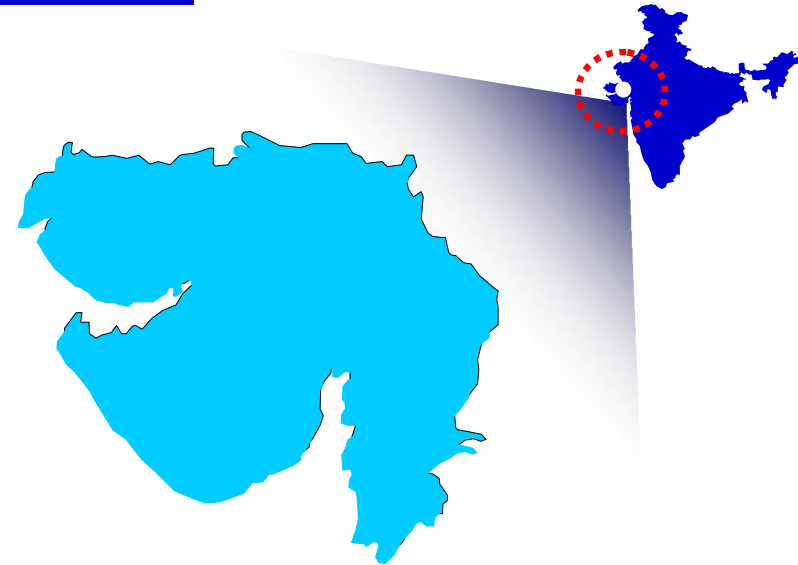
# Oil and Gas

## Sector Profile

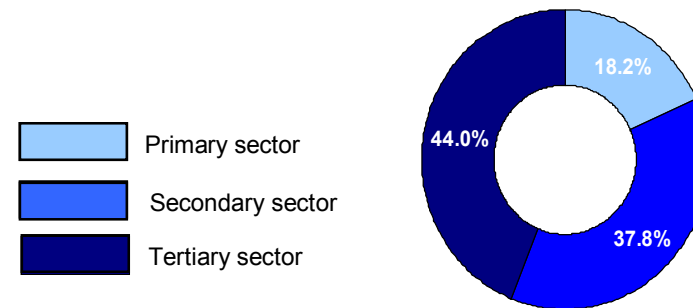
# Gujarat : An Enduring Strong Economy

- **Population** : Over 50 million (5.0% of India)
- **Geographical area** : 1,96,000 sq. km (6.2% of India)
- **Gross State Domestic Product (GSDP)** : US\$45.3 billion
- **Per Capita Income** : US\$915 at current prices
- **Urbanisation** : 37.4%

- **High industrial growth** : Gujarat has demonstrated a high industrial growth rate of 12.5% from 2002 -2007
- **Industrialisation** : Gujarat is home to over 800 large industries and 3,20,000 micro, small and medium enterprises



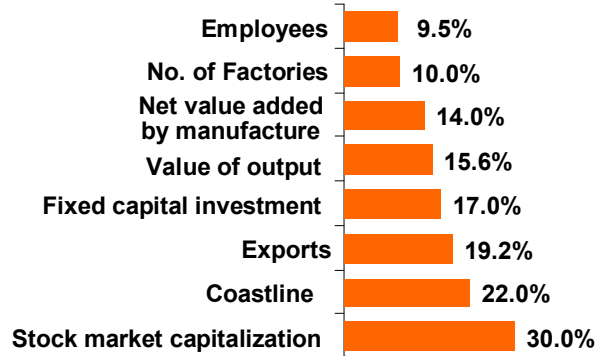
Composition of GSDP as per economic activity (2006-07)



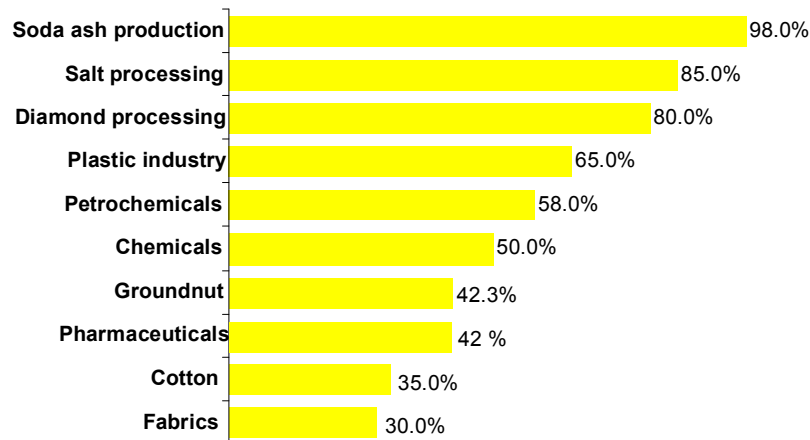
Source: Socio Economic Review 2007-08

# Gujarat : A Thriving Industrial State

## Contribution to India's economy

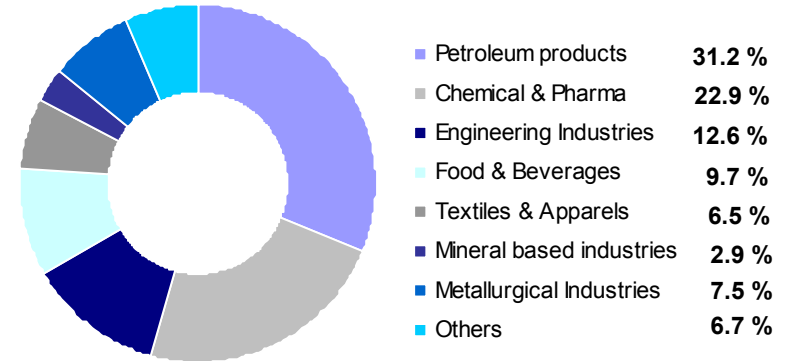


## Significant share in key sectors & products



Source: Socio Economic Review 2007-08

## Presence across industry sectors



- **World's largest producer of castor and cumin**
- **World's largest gas based single location sponge iron plant**
- **World's largest producer of processed diamonds**
- **World's 3rd largest producer of denim**
- **Asia's largest grass root petroleum refinery at Jamnagar**
- **India's largest producer of cotton**
- **India's first LNG chemical port terminal at Hazira**

# Gujarat: Robust Infrastructure

## Power



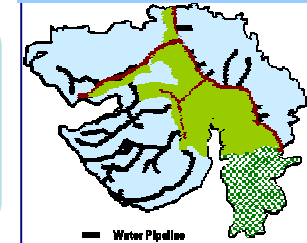
### *Dependable power supply – key to industrial development*

- Present power generation capacity is **9,628 MW**; plans afoot to raise it to **25,000 MW** by 2012
- Per capita power consumption is **1,354 units** against the national average of **665 units**
- Rich availability of natural gas (34 MMCD) and lignite (1,072 MMT)
- 24-hour 3-phase uninterrupted power supply

### *Gujarat is the only State to carry out interlinking of rivers*

- An extensive water grid network of **75,000 km** for irrigation and drinking
- It will cover **75%** population of the state by 2010

## Water



### *Transformation of economy through natural gas*

## Gas



- Gujarat State Petronet Limited (GSPL) supplies piped gas to 13 districts, 5 more districts will be added
- Total length of Integrated Gas Grid will be **2,200 km**, of which 1,453 km is complete and the rest is under construction

# Gujarat: Robust Infrastructure

## Rail and Road



## *Surfaced road length – one of the highest in India*

- State-of-the-art road infrastructure: India's first National Expressway from Ahmedabad to Baroda
- Total road length is **74, 018 km** - **95%** surfaced road
- Total rail length - **5188 km** (**8.25%** of India)

## *Gujarat Ports opening the gateway to prosperity*

- **42 ports** along **1,600 km coastline**, including **1 major port at Kandla** and 41 minor ports
- **Landmark projects** such as LNG port terminal at Hazira developed by Shell India Limited, green field port at Mundra developed by Gujarat Adani Port Limited, LNG terminal at Dahej developed by Petronet LNG Ltd. and Pipapav port developed by Gujarat Pipapav Port Ltd

## Ports



## Airports



## *Airport connectivity – a cutting edge for business*

- 13 airports - Vadodara, Surat, Jamnagar, Rajkot, Bhavnagar, Porbandar, Bhuj, Pipavav, Mandvi, Mundra, Kandla, Palanpur and Ahmedabad (International Airport)

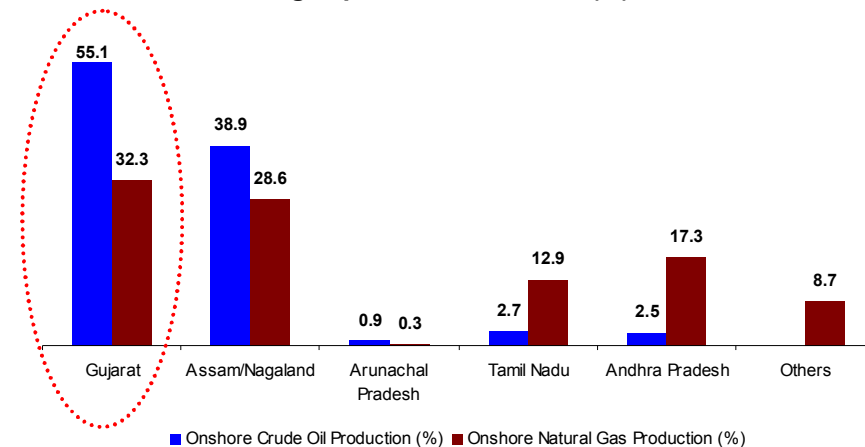
# Gujarat - The Gas Capital of India

- India, USA, Germany, France, Italy, U.K, Japan, China, Russia, and South Korea together constitute 68.6% of the total oil consumed in the world
- India is the sixth greatest energy consumer in the World
- Gujarat ranks **1st** in the **production of crude oil (onshore-55.10%) and natural gas (onshore-32.3%)** in India
- The State has the **highest number of oil and gas fields** (onshore and offshore) in India (31.3%)
- 36.6% of India's installed refining capacity is in the State of Gujarat, which is the highest in India
- Reliance Petroleum Limited at Jamnagar (Gujarat) is the largest grassroots refinery in the Asia Pacific**

**Table 1: Oil and Gas industry in India – a snapshot**

<b>Crude oil reserves</b>	725 million tonnes
<b>Natural gas reserves</b>	1055 billion cubic metres
<b>Crude oil production</b>	34.117 million tonnes
<b>Production of petroleum products</b>	144.93 million tonnes
<b>Natural gas production</b>	32.27 billion cubic metres

**Fig. 1:**  
State-wise contribution to crude oil and natural gas production in India (%) 2007-08

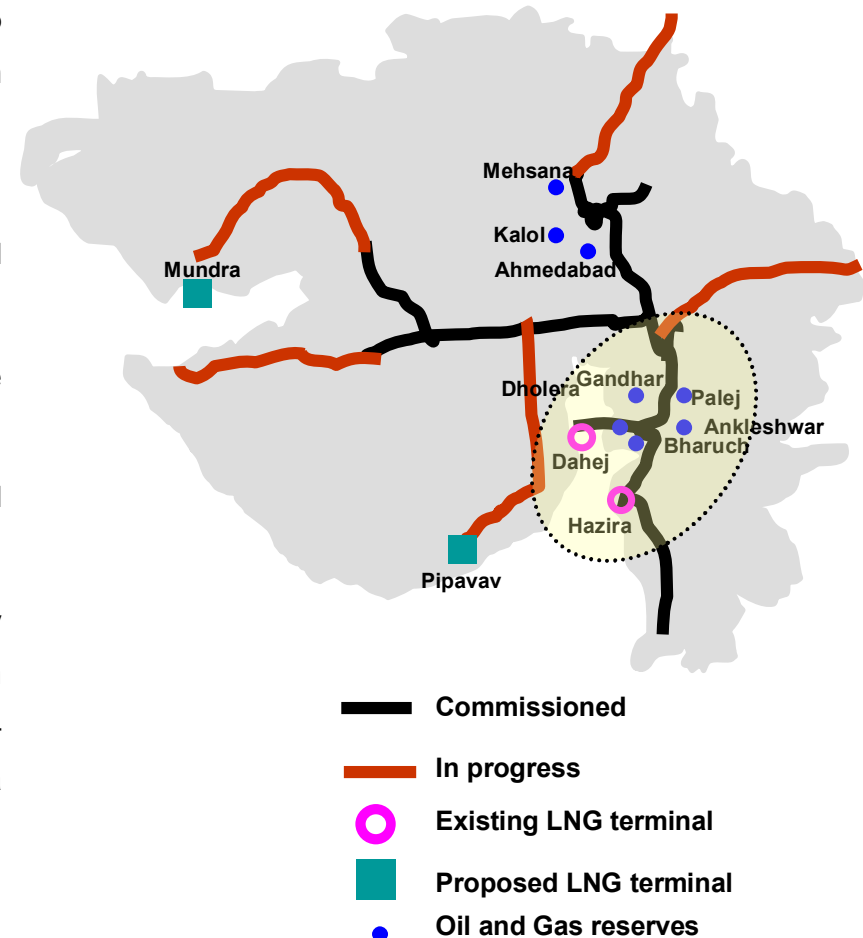


Source: Ministry of Petroleum and Natural Gas, Govt. of India (2007-08)

# Gujarat – The Current Oil and Gas Scenario

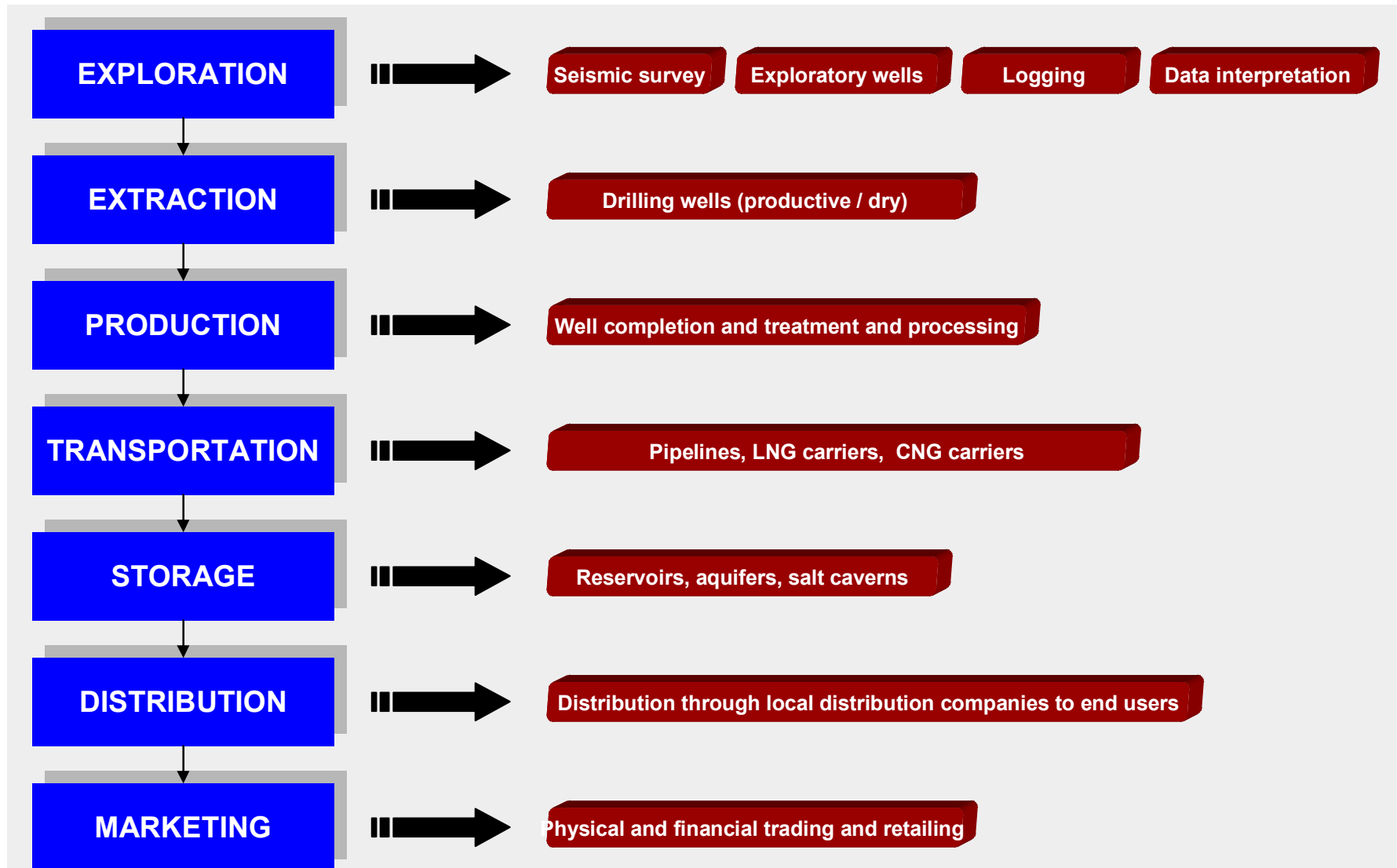
- Gujarat is the **only state in India with a state-wide gas grid and multi gas suppliers**
- The State has the potential to become a national hub for gas due to its proximity to the Middle East gas sources and attractive northern market
- Gujarat State Petroleum Corporation (GSPC) is India's only State Government-owned company in the oil and gas exploration and production business
- GSPC is known for India's largest gas discovery in KG Basin on the coastline of Andhra Pradesh
- Gujarat is the only State having 2 LNG Terminals (Dahej and Hazira)
- The natural gas produced in the western offshore fields in India is partly brought to Hazira (Gujarat), where it is sweetened and partly utilised in Hazira itself, while the remaining is fed into the Hazira-Bijapur-Jagdishpur (HBJ) pipeline, which passes through Gujarat, Madhya Pradesh, Rajasthan, UP, Delhi and Haryana
- Natural gas is currently the source of half of the LPG produced in India. **Vaghodia (Vadodara district in Gujarat) is one of the major LPG extraction regions in India**

Map 1: Oil and gas industry in Gujarat- a snapshot



Source: Ministry of Petroleum and Natural Gas, Govt. of India (2006-07)

# Oil and Gas Value Chain





# Emerging Areas

## Opportunities for SME sector

- Downstream business in CNG
- CNG cylinders and kit manufacturers
- CNG stations
- Laying pipelines
- Vendor items like meters, etc. for city distribution.

## Exploration and Production

- Crude oil processing units
- Liquification of isolated gas
- Rigs manufacturing
- Crude oil and gas testing units

## Alternative Source of Energy (Biodiesel)

- Biodiesel production through increased jatropha cultivation
- Biodiesel production from molasses
- Solar and wind energy
- Cottage industries
- Manufacturing of isolated dye

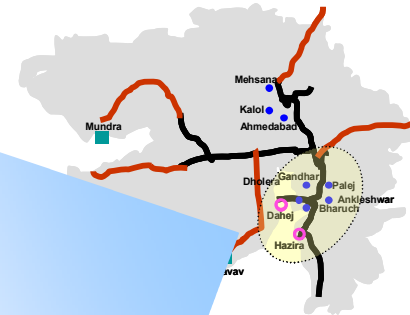
## Education

- Drilling Training Schools
- Gas Welding Schools

Gas-based equipments/ appliances/ Metres

City gas distribution projects

Gas grid expansion projects



# City Gas Distribution

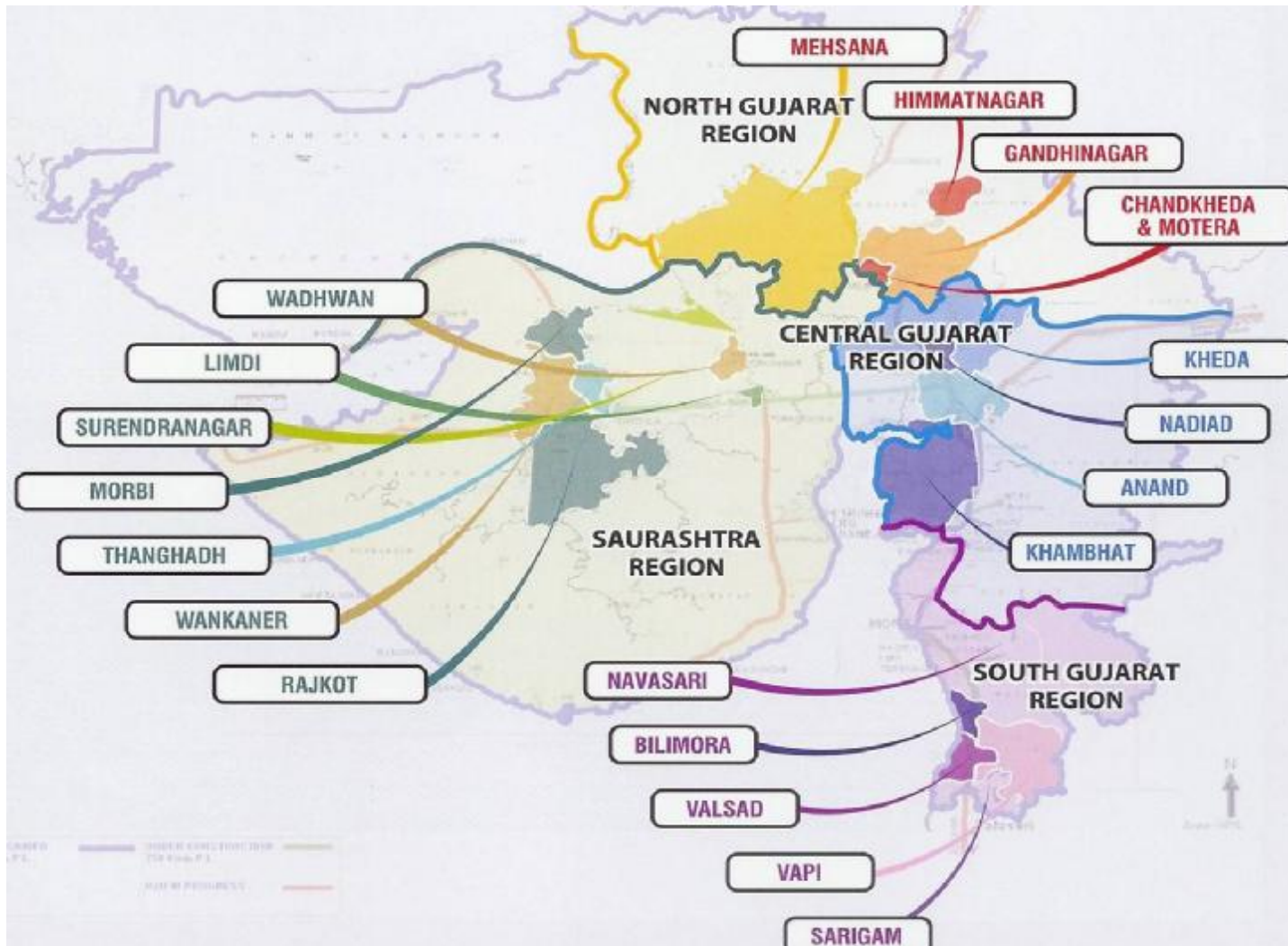
- Since 2007, GSPC has set up city distribution projects in 12 cities of Gujarat, with gas supply in 11 towns – **Gandhinagar, (Chandkheda-Motera), Vapi, Sarigam, Navsari, Hazira, Anand, Nadiad, Himmatnagar, Morbi, Rajkot and Thangadh**
- There are 108 CNG stations in Gujarat set up by Gujarat Gas Company Limited (GGCL), Adani Group and GSPC. Of these, 23 are under GSPC in seven districts – Surat, Bharuch, Vadodara, Ahmedabad, Mehsana, Gandhinagar and Sabarkantha
- 30% of the existing stations are owned by GSPC, while the remaining 70% have been formed in collaboration with existing petrol pumps
- It has been **proposed to set up 300 CNG stations in the state across 18 districts and 179 talukas (11<sup>th</sup> five year plan)**
- **Potential locations for establishment of these stations are along the national highways / state highways.**

## Drivers for growth of city gas distribution

- ✓ *Increase in domestic gas production from the KG basin*
- ✓ *Development of infrastructure (both at local and cross-country level)*
- ✓ *The Petroleum and Natural Gas Regulatory Board (PNGRB) is expected to issue final regulations in a few months*
- ✓ *Gas is cheaper and more environment friendly than alternative fuels like petrol, diesel and fuel oil*

Source: Gujarat State Petroleum Corporation (GSPC)

# City Gas Distribution Locations in Gujarat

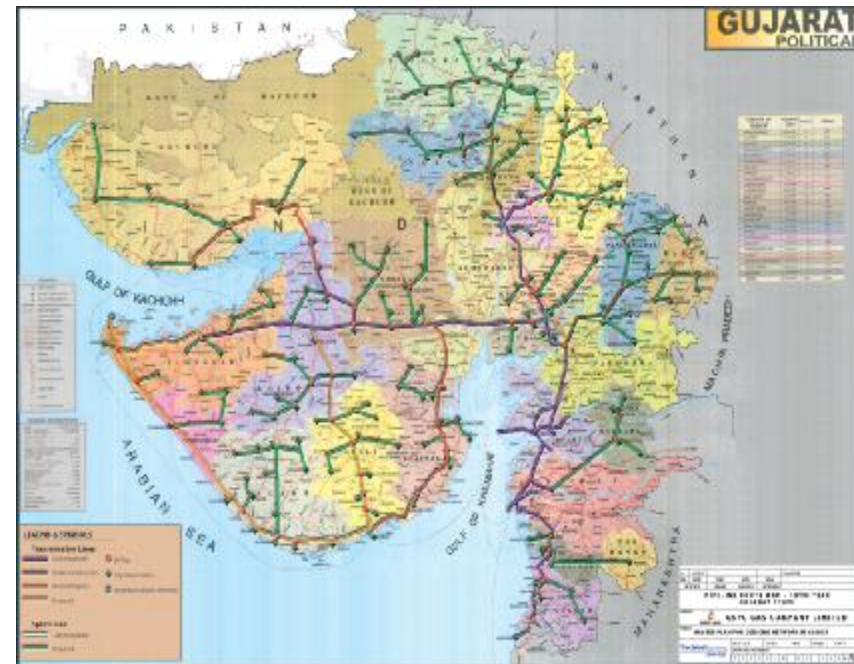


Source: Gujarat State Petroleum Corporation (GSPC)

# Integrated Gas Grid

- Gujarat is the first state to set up its own gas transmission line, resulting in the growth of gas-based industry in Gujarat
- Districts covered by Gujarat State Petronet Limited – Valsad, Navsari, Surat, Bharuch, Vadodara, Anand, Kheda, Ahmedabad, Gandhinagar, Mehsana, Sabarkantha, Surendranagar, Rajkot
- The States of Rajasthan, Maharashtra, Karnataka, Andhra Pradesh and Tamil Nadu have been inspired by the Gujarat Gas Grid model and are in the process of replicating the same
- With an extensive transmission network, almost 1200 kms of gas grid is in operation and around 800 kms is under planning/ construction and an expansion of around 200 km is planned
- GSPC already transmits over 13 MMSCMD\* of gas to industries in various cities in Gujarat through its pipeline network, including around 6 mmscmd of regassified LNG
- The exploration and production and trading of gas has attracted private sector participation by the entry of private companies such as Reliance Industries Limited (RIL) and Adani Group into the sector.

Map 2: Integrated gas grid



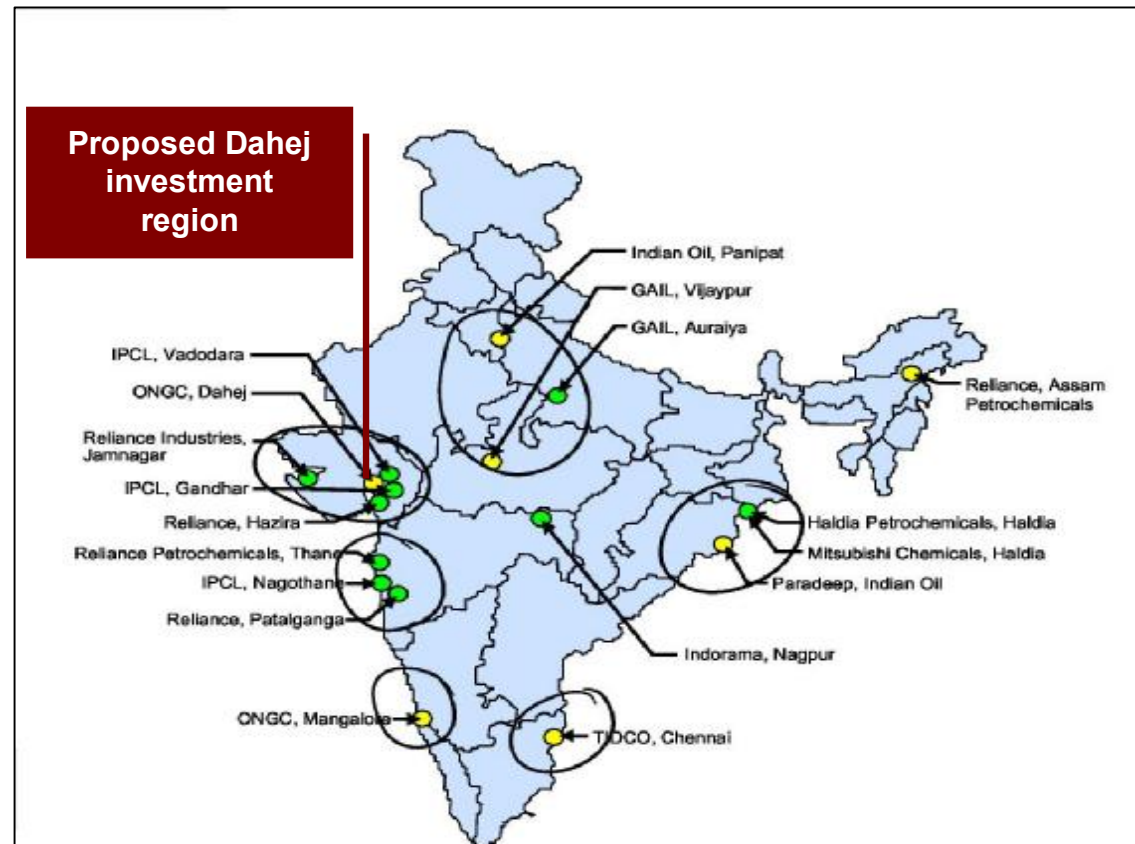
Source: Gujarat State Petroleum Corporation (GSPC)

\* Million Metric Standard Cubic Meter per Day

# Petroleum, Chemicals and Petrochemicals Investment Region: (PCPIR)

Map 3: Location of Dahej PCPIR in Gujarat

*Dahej has been identified as a major thrust area for industrial development by Government of Gujarat*

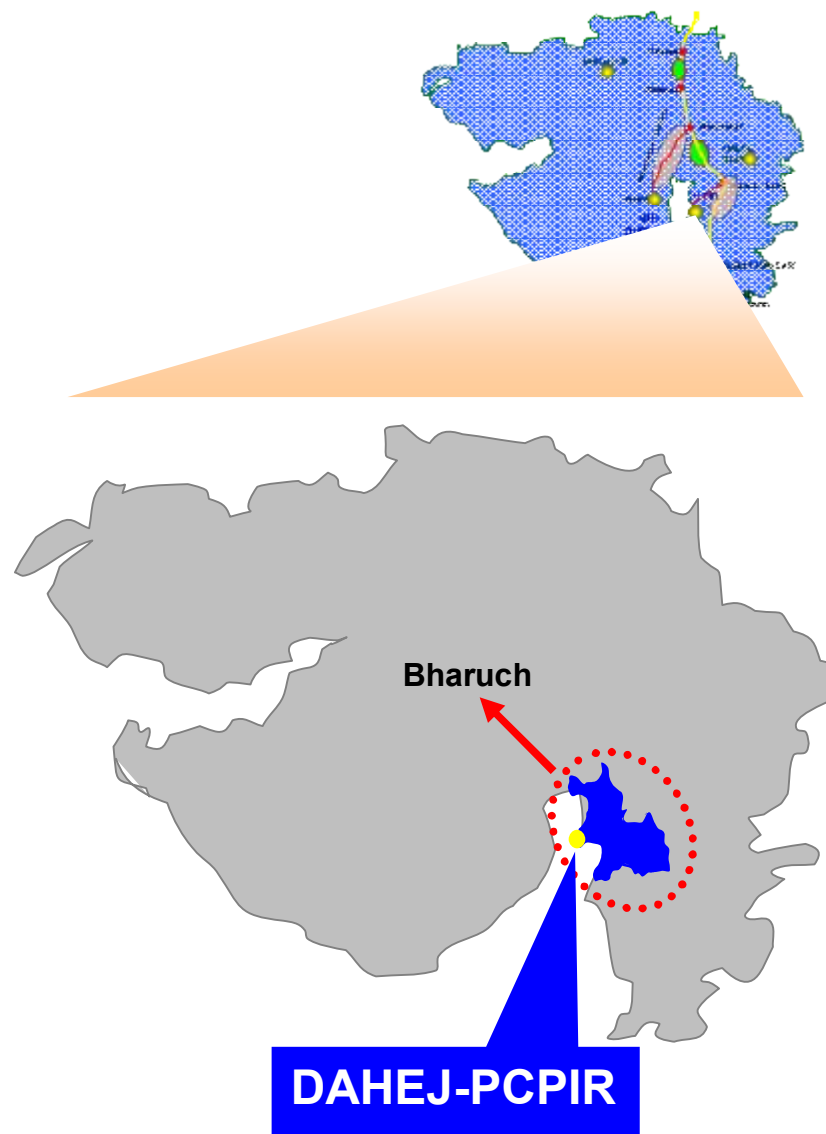


# Petroleum, Chemicals and Petrochemicals Investment Region: (PCPIR)

- The proposed industrial SEZ in the PCPIR includes, petrochemical and downstream petrochemical industries, synthetic organic chemicals, industrial gas producing industry, packaging industry, shipbuilding/fabricating unit and other small chemical industries
- Major business conglomerates having their facility includes Indian Petrochemicals Corporation Limited (IPCL), Petronet LNG and Gujarat Chemical Port Terminal Company Limited (GCPTL)

## Location:

- Centrally located in the industrial belt, Dahej is an ideal location to serve North, West and Central India and towards Middle East, Africa, Europe and North America
- Spread over an area of 5,000 hectares, Dahej is one of the most sought after destination in India

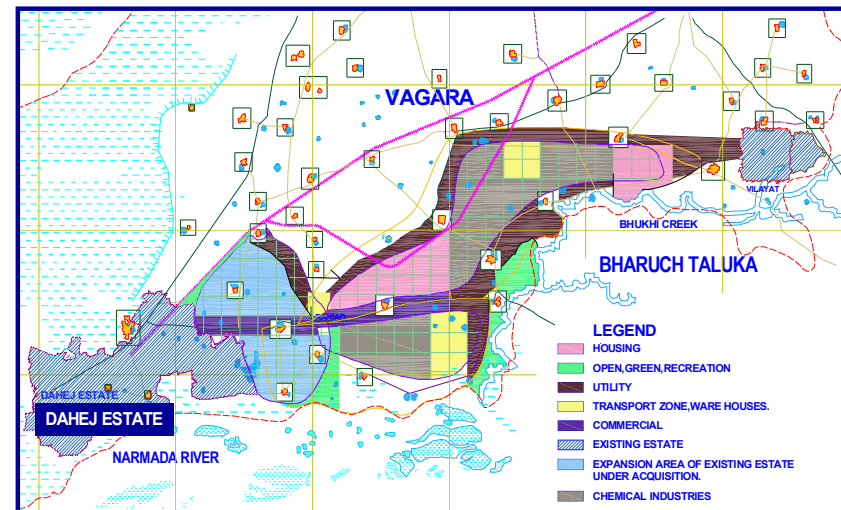


# Petroleum, Chemicals and Petrochemicals Investment Region: (PCPIR)

- **Dahej PCPIR – Unique Selling Proposition**
- Concentration of petroleum, chemical and petrochemical estates around PCPIR
  - Ankleshwar, Panoli, Jhagadia, Hazira, Baroda Petrochemical Complex and Nandesari
- Rich natural resources and feedstock availability; all infrastructure - road, rail, port, power, gas and water - in place with planned upgradation.
- Chemical Port Terminal and Chemical Storage Facility at Dahej
- PCPIR specific infrastructure such as effluent disposal pipelines, common effluent treatment plants, solid waste disposal sites available.
- Proposed SEZ by GIDC at Dahej and Jhagadia; and proposed SEZ in private sector by Jubilant

- *400 km north of Mumbai*
- *30 km from Mumbai -Delhi National Highway and Railway*
- *110 km from Ahmedabad International Airport*

**Map 4: PCPIR master plan**



**Table5: Presence of industries in PCPIR**

Industries in PCPIR	Area Identified	Land %age
Chemical and petrochemical industries	9,000 Ha	37.5%
Related engineering industries	2,000 Ha	8.33%
Green belt	3,000 Ha	12.5%
Roads, rail and corridor	6,000 Ha	25%
Housing and social infra	1,000 Ha	4.16%
Transport and warehousing	1,000 Ha	4.16%
Port and backup	1,000 Ha	4.16%
Recreational zone	500 Ha	2.08%
Power Water Infrastructure	500 Ha	2.08%
<b>Total</b>	<b>24,000 Ha</b>	

# Leading Industry Players of the State

**Table 3: Leading industry players having established presence in Gujarat**

Company	Location in Gujarat	Key Operations
Adani	Ahmedabad, Vadodara	Natural gas distribution
BG Plc	Vadodara, Bharuch, Surat	Transmission and distribution
Cairn Energy	Gulf of Khambhat, Suvali (Surat)	Exploration, production, marketing
Essar	Ahmedabad, Jamnagar and Hazira	Offshore and onshore exploration and production, refinery and marketing
GAIL (India)	Ahmedabad, Processing complex at Dahej, Hazira, and Vagodia	All aspects of the natural gas value chain
GSPC/GSPL/GSPC Gas	Across several districts	Exploration, production, gas transmission and distribution
Geo global	Kandla, Kutch	Exploration and development
Jubilant Energy	Gulf of Khambhat	Exploration and production
John Energy	Ahmedabad	Service provider for facility development and management, logistics and compression of natural gas
Oilex	Gulf of Khambhat	Exploration and production
ONGC	Mehsana, Ahmedabad, Vadodara, Bharuch, Surat, Processing complex at Gandhar	Exploration and production
Petronet LNG Limited	Dahej, Vadodara	LNG re-gasification terminal (Dahej)
Reliance	Kutch, Khambhat, Jamnagar (largest refinery in the world)	Exploration and production, petroleum refining and marketing
Shell	Hazira (Shell and Total's LNG Terminal), Ahmedabad	LNG terminal in collaboration with total, LNG, retail fuels business



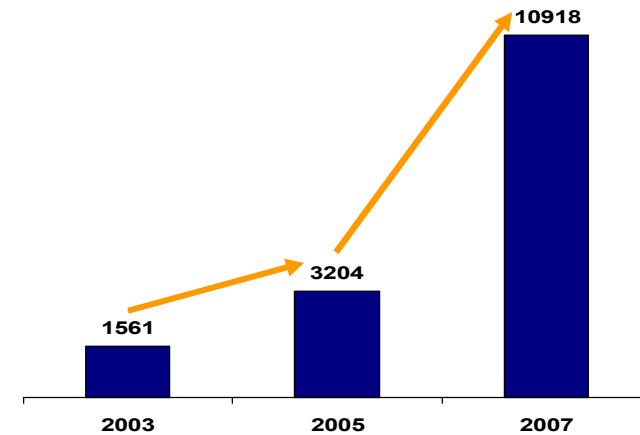
# Educational Infrastructure

- Presence of several reputed institutes such as, Indian Institute of Management (IIM), National Institute of Design (NID), Centre for Environmental Planning and Technology (CEPT) etc. has helped the state in providing a pool of quality manpower to the industries.
- A Petroleum University has been established near Gandhinagar in collaboration with **Gujarat Energy Research and Management Institute (GERMI)** and **Gujarat State Petroleum Corporation Ltd. (GSPC)**
- The University has the following constituent institutes offering courses in petroleum engineering, chemical engineering, mechanical and instrumentation and control engineering:
  - ✓ **Institute of Petroleum Technology, Gandhinagar**
  - ✓ **Research and Innovation Centre, Gandhinagar**
  - ✓ **Institute of Petroleum Management, Gandhinagar**
  - ✓ **Executive Training and Development Centre, Gandhinagar**
- The Institute of Petroleum Technology offers a four year B.Tech programme focused on Oil and Gas Sector
- The Executive Training and Development Centre, Gandhinagar conducts following training programmes for executives:
  - ✓ **Production Sharing Contracts for Oil and Gas Exploration and Production**
  - ✓ **Specifics of Deep Water Drilling**
  - ✓ **LNG Business – Opportunities and Challenges**
  - ✓ **High Temperature and High Pressure wells and Extended Reach Drilling**

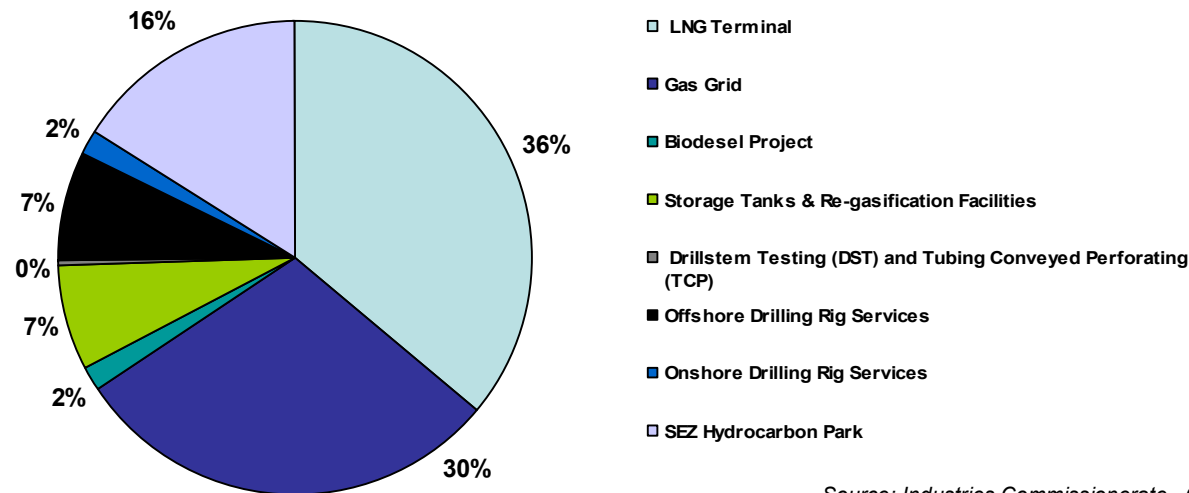
# Investment Trends

- During **Vibrant Gujarat Global Investors' Summits 2007 (VGGIS)**, a total of **26 MoUs** were signed with the total investment amounting to **US\$ 10,918 million** providing an employment opportunity to almost **16,515 people**

**Fig. 2: Growth in investments (in US\$ million) VGGIS (2003, 2005, 2007)**



**Fig. 3 : Sector-wise share of MoUs during VGGIS 2007 (%)**



Source: Industries Commissionerate, Government of Gujarat

# Investment Opportunities

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## *Upstream*

- *Acquisition of exploration blocks*
  - *Joint ventures for exploration of state, national and overseas blocks*
- 



## *Midstream*

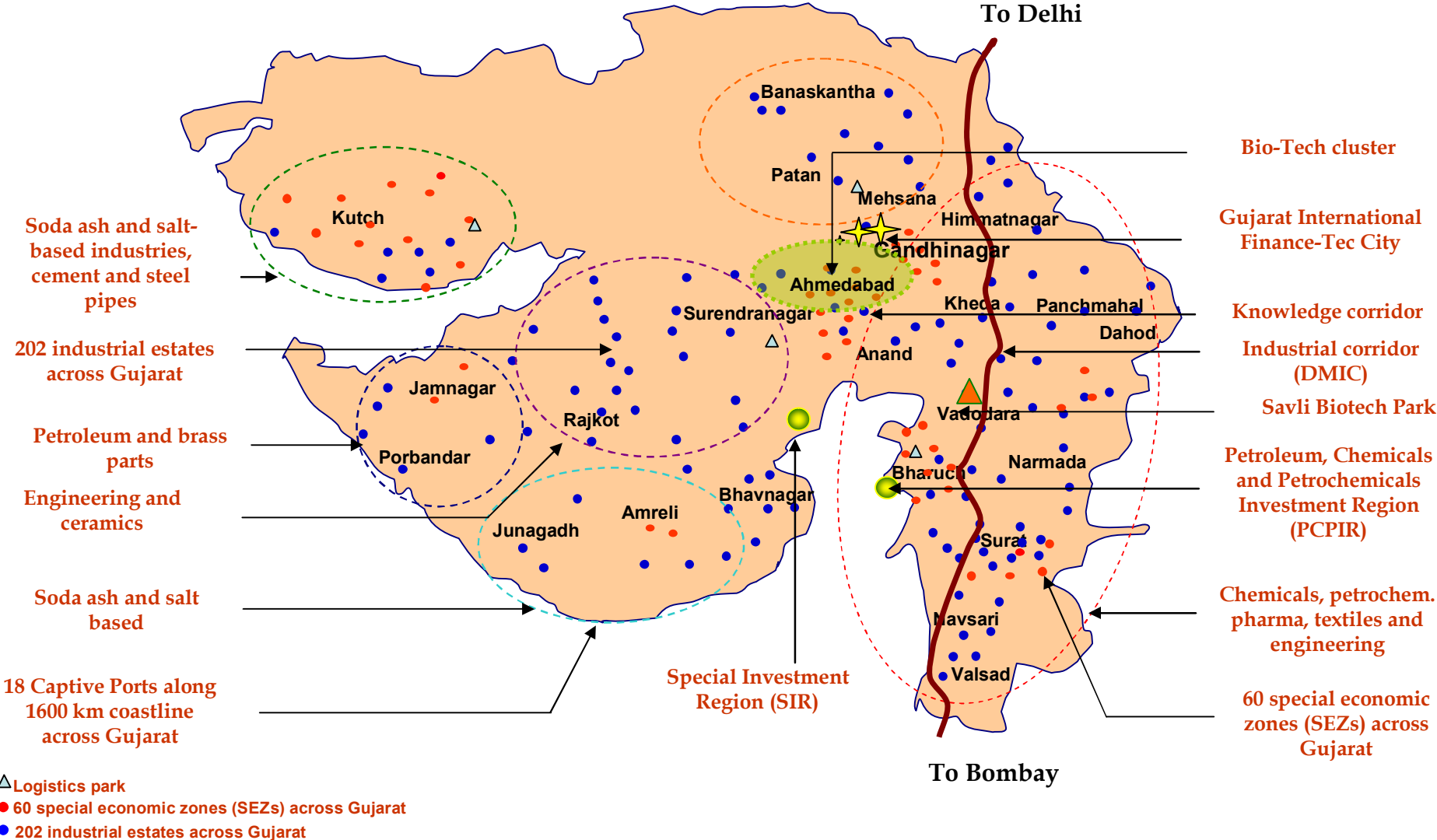
- *Transportation of oil and gas*
- 



## *Downstream*

- *Retailing of petroleum products*
  - *City gas distribution (PNG and CNG)*
  - *Gas based power plant/ captive plant*
-

# Invest in Gujarat : A world- class Business Destination



# Key Contacts

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Gujarat State Petroleum Corporation Ltd.

<http://www.gspcgroup.com>

Gujarat State Petronet Ltd.

<http://gujpetronet.com>

Industries Department, Govt. of Gujarat

<http://www.gujaratindustry.gov.in>

Ministry of Petroleum and Natural Gas

<http://petroleum.nic.in>

iNDEXTb-Industrial Extension Bureau

<http://www.indextb.com>

Gujarat Industrial Development Corporation

<http://www.gidc.gov.in>

Gujarat Infrastructure Development Board

<http://www.gidb.org>