

# ISAS Special Report

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## The Delhi Mumbai Industrial Corridor: Salient Features and Recent Developments

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### **Abstract**

*In order to address existing systemic challenges and encourage a broad-based, multi-stakeholder development model for infrastructure creation, the Government of India has envisaged the Delhi Mumbai Industrial Corridor (DMIC) project, spanning over 1,483 km between the political (Delhi) and the financial (Mumbai) capitals of the country. Moving beyond its traditional role of being the developer and financier, the government, through the DMIC, seeks to create trunk infrastructure and offer an enabling policy environment to attract private capital for phased regional development. This document presents the salient features, recent developments and the upcoming investment opportunities in the DMIC region.*

### **Introduction**

At USD 500 billion, infrastructure investment as a percentage of GDP was 8% in the Eleventh Five Year Plan– (2007-2012) – about 2.5% higher than the previous plan period – with 30% of the investment from the private sector. Despite this increased emphasis on infrastructure development,<sup>2</sup> India's experience in the sector has been mixed, in terms of

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<sup>2</sup> The key phenomena that influenced the evolution of the infrastructure sector in India are elaborated in Appendix I

capacities added and quality of services delivered,<sup>3</sup> and key questions have emerged on the sustainability of existing models of infrastructure growth and the role of government in the same.

Through the conceptualisation of the Delhi Mumbai Industrial Corridor (DMIC), the government seeks to address concerns of sustainability and go beyond its current role as a developer and financier of infrastructure projects to that of a facilitator by creating an enabling policy environment to attract private investments.

This paper provides an introduction to the DMIC project and briefly discusses the objectives, salient features, institutional framework, recent developments and upcoming investment opportunities in the project.

## Overview

The Delhi Mumbai Industrial Corridor is India's largest regional development project spanning a length of over 1,483 km between the political and commercial capitals of India (Delhi and Mumbai respectively). It has an influence area of approximately 436,486 sq km, about 14% of India's total geographic area. DMIC is notified as a mega infrastructure project being undertaken with the financial and technical assistance of the Japanese government. The project covers the states of Uttar Pradesh, NCR of Delhi, Haryana, Rajasthan, Madhya Pradesh, Gujarat, Maharashtra and the union territories of Diu & Daman, and Dadra & Nagar Haveli. It is expected to attract investments worth USD 90 billion and create direct employment opportunities for over 3 million people.

The key project goals<sup>4</sup> of DMIC are:

1. Double the employment potential of the region in five years (14.87% CAGR)
2. Triple industrial output in five years (24.57% CAGR)
3. Quadruple exports from the region in five years

The new green-field cities, being planned under DMIC, are expected to address the pressures of urbanisation and are primarily driven by extensive growth in the manufacturing and the services sectors. These cities are being planned as sustainable and smart cities, with interconnected roads, and rail and communication systems providing speed, access and global connectivity. Their development is based on sustainable master planning concepts and other initiatives such as:

- (i) Energy sufficiency through use of renewable sources
- (ii) Conservation of agricultural land and protection of sensitive natural environment (coastal zones, forests and sanctuaries)

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<sup>3</sup> The various developments in key infrastructure sectors in the Eleventh Plan along with a brief description of the challenges in each sector are presented in Appendix II

<sup>4</sup> <http://www.dmicdc.com/cpage.aspx?pgid=11>, retrieved as on 3 March, 2013

- (iii) Innovative models to acquire and collate land
- (iv) Seamless integration of existing villages with proposed new cities
- (v) IT-based real-time management and governance of new cities

The development model in the corridor is largely premised on leveraging existing industries and economic clusters, promoting value enhancing and complementary industries, and developing industrial and social infrastructure enablers. The project region currently covers the large industrial belts in Ghaziabad, Noida, Baroda, Surat, Vapi, etc. as well as mineral-rich areas such as Nagpur, Pali, Chittaurghar and Kota. DMIC states contribute 43% of India's GDP, 50% of agricultural produce of principal crops in the country and 60% of total exports. Approximately 60% of total FDI into the country, between April 2000 and April 2012, has been in these states. Further, they constitute 40% of the country's factories and workforce.

### Project Influence Areas

State	DMIC Value of Output (2040) INR MN	BAU Value of Output (2040) INR MN	DMIC Growth over BAU Growth (%)
UP	14,512,882	6,102,362	138%
Haryana	22,257,525	5,591,793	298%
Rajasthan	16,498,258	4,935,486	234%
Gujarat	90,724,057	38,127,947	138%
Maharashtra	46,409,571	18,720,878	148%
MP	8,950,391	1,888,660	374%
Daman & Diu	4,733,953	1,744,403	171%
Dadra & Nagar Haveli	8,551,347	3,848,403	122%
<b>Total</b>	<b>212,637,984</b>	<b>80,959,933</b>	<b>163%</b>

Source: Perspective Plan for DMIC, 2009, DMICDC

DMIC is expected to further enhance the value of output from these project influence areas. Madhya Pradesh, Haryana and Rajasthan are most likely to benefit the most due to the coming up of the DMIC. When compared to a Business as Usual (BAU) scenario, the respective states are expected to quadruple, triple and double industrial output by 2040 through DMIC intervention

## DMIC Development Framework

A four-pronged planning approach has been adopted for the DMIC region to ensure holistic development.

In addition to building new cities, the DMIC project seeks to provide a boost to industrial infrastructure in the region through the up-gradation of existing trunk infrastructure by establishing efficient and multi-modal logistics hubs, building integrated townships, expanding existing ports and developing new ports, modernising airports and enhancing their cargo handling capacities, improving road/rail connectivity and implementing effective environment protection norms and establishing modern agro processing zones and developing IT/ITES hubs with allied infrastructure facilities.

### Salient Features

The following planning and development models have been incorporated while conceiving the master plan for this corridor:

**(i) Development Nodes**

Integrated Investment Regions (IRs) and Industrial Areas (IAs) have been identified within the corridor. These nodes are to be set up as self-sustained industrial townships with good infrastructure, road and rail connectivity for freight movement to and from ports and logistics hubs, domestic/international air connectivity, reliable power and quality social infrastructure. Investment Regions (IRs) are specifically delineated zones with a minimum area of about 200 sq km (20,000 hectares) and Industrial Areas (IAs) constitute a minimum area of 100 sq km (10,000 hectares). About 24 such nodes, 9 IRs and 15 IAs, have been identified under this project.

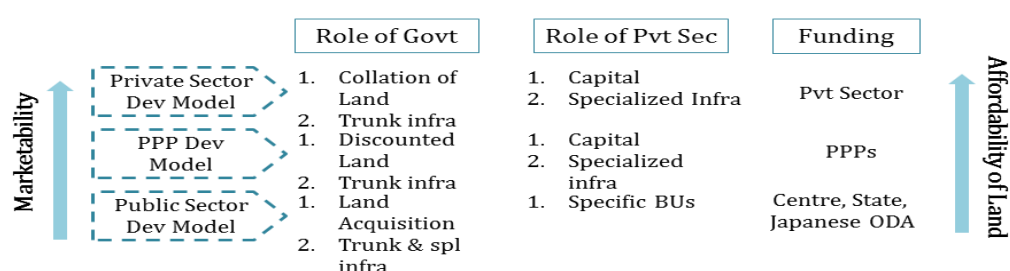
**(ii) Zoning**

		Human Development Index		
		High	Medium	Low
Industrial Development	High	A	A	B
	Medium	A	B	C
	Low	B	C	C

*Source: Perspective Plan for DMIC Region, DMICDC, 2009*

The DMIC perspective plan classifies the total area covered into three zones based on their Human Development Index and Industrial Development status. The proposed development approach, prioritisation of infrastructure investments and the selection of industries are based on the following zoning model.

### (iii) Development Models



Three types of models have been proposed for the development of individual projects under DMIC:

- PPP Model:** For projects where collation of land is difficult (but not unaffordable) and the marketability of the project is high, public funds can be utilised for laying trunk infrastructure while private sector investments may be encouraged for setting up specialised infrastructure and operating units. Under this model, financial closure will be attempted through Public Private Partnerships (PPP).
- Public Sector Model:** In the case of projects where land consolidation is unaffordable or very difficult, the public sector may decide to develop the project on its own, create trunk infrastructure and encourage the private sector to make only specialised investments. Funding sources would be the central government, state governments and the Japanese Overseas Development Assistance.
- Private Sector Model:** In cases where land acquisition is not expensive or difficult and the project has high marketability (feasibility) direct private sector investments will be solicited.

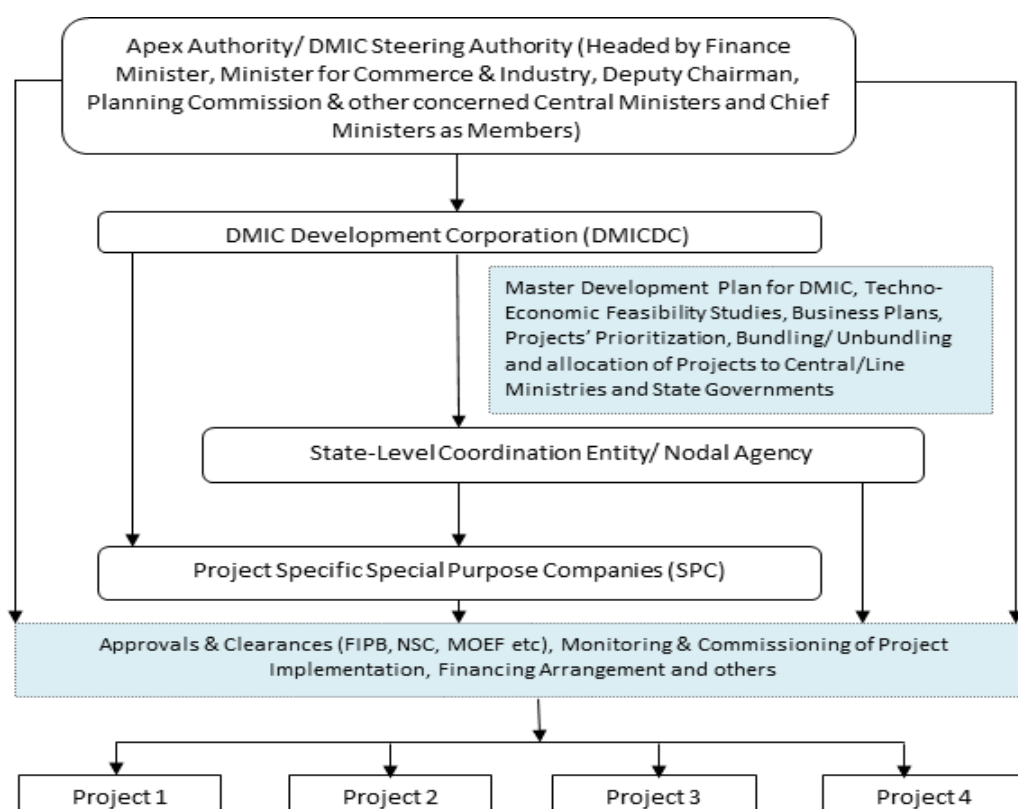
### (iv) Priority Industries

On the basis of the nature of the local industrial ecosystem, including access to raw materials and supply chain and the employment generation potential, the following industries have been identified as priority industries under the DMIC project:

- Motor vehicles, auto components and other transport equipment
- Pharmaceuticals, R&D, clinical research, contract
- Manufacturing
- IT/ITES (including knowledge services)
- Bio-tech
- Agro/Food products and beverages
- Textiles and apparels
- Machinery and equipment (including electrical machinery)
- Rubber and plastics
- Coke, refined petroleum products
- Basic metals
- Fabricated metal products
- Non-metallic minerals

## Institutional Framework

Given the size and complexity of the project, a four-tier institutional framework has been adopted to implement and oversee the DMIC project. The project includes implementation through public private partnerships as well as directly by the government, besides other specific arrangements. The apex authority of DMIC is headed by the Finance Minister and includes the Minister for Commerce and Industry, the Deputy Chairman of Union Planning Commission, chief ministers of project states and other ministers concerned. The Delhi Mumbai Industrial Corridor Development Corporation (DMICDC) is the nodal agency in charge of preparing the master plan, conducting techno-economic feasibility studies of the identified projects, undertaking project development and preparatory work and coordinating with central ministries, state governments, etc. Each state is expected to have a designated coordination entity to work with DMICDC, the central authorities and the private sector. Each project under DMIC will be undertaken by a special company constituted for the purpose.



Source: <http://www.dmicdc.com/cpage.aspx?pgid=4>

**Apex Authority:** The government of India constituted the Apex Authority for DMIC in August, 2007 with the Union Finance Minister as Chairman, Deputy Chairman of the Union Planning Commission, other cabinet ministers and six chief ministers of DMIC states as members. The functions of the Apex Authority are: (i) Project – Approval – planning the project, approving its concept and various elements and inter-se prioritisation of schemes (ii) Approval of the financing –pattern – proportion of domestic and foreign capital, extent of public-private funding, grants and loans,

and approvals for viability of funding arrangements (iii) Setting up of timelines for implementation and monitoring thereof.

**Delhi Mumbai Industrial Corridor Development Corporation (DMICDC)** is a special-purpose vehicle incorporated in 2008 as the project development agency for the DMIC project. The Government of India owns 49% equity, and an offer was made to the Japanese Government (represented by the Japanese Bank of International Cooperation) to divest 26% stake. The rest is held by financial institutions. DMICDC undertakes project development services for investment regions/industrial areas, economic regions, industrial nodes and townships, for various central government agencies and also assists state governments. It acts as an intermediary for the purpose of developing and establishing infrastructure projects and facilities in India by developing and disseminating appropriate financial instruments, negotiating loans and advances of all nature, and formulating schemes for the mobilisation of resources and extension of credit for infrastructure. In addition, the DMICDC undertakes the study, research and survey of issues relating to financing infrastructure and advises the central government, state governments, municipal authorities, other development authorities, companies, and project developers. DMICDC acts as a pass-through entity for specific projects and raises various financing instruments such as ‘Project Development Fund (PDF)’ that could be used as a revolving fund, earmarked specifically for undertaking project development activities on Public Private Partnership basis.<sup>5</sup>

### **State-Level Nodal Agencies**

The following state level nodal agencies have been identified to coordinate with various state and central agencies and interface with the DMICDC:

1. Haryana – Haryana State Industrial & Infrastructure Development Corporation
2. Gujarat – Gujarat Infrastructure Development Board
3. Madhya Pradesh – Trade and Investment Facilitation Corporation Limited
4. Uttar Pradesh – Greater Noida Industrial Development Authority
5. Rajasthan – Bureau of Investment Promotion
6. Maharashtra – Maharashtra Industrial Development Corporation

### **Special Purpose Companies**

Most of the projects in DMIC region are expected to be implemented through the Public Private Partnership mode and special purpose companies are to be established for project implementation, operation, maintenance and management of such facilities.

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<sup>5</sup> Retrieved from <http://www.dmicdc.com/cpage.aspx?pgid=2> as on 12 February, 2013

## Investment Opportunities

DMIC project offers substantial investment opportunities across infrastructure sectors, viz., roads, ports, airports, railways, logistics hubs, integrated townships, urban transport, etc. and other sectors such as skill development and education, healthcare, IT & ITES, BFSI, etc. About USD 90 billion of investments are planned across different sectors in Phase I of the project.

### Investments Envisaged in Phase I of the Project

Sector/Industry	Investment (USD Bn)
Manufacturing/Industrial Processing Area/SEZs	33.8
Agro/Food Processing Area with backward & forward linkages	2.8
IT/ITES Hubs	8.8
Knowledge Cities	7.5
Logistics Infrastructure	3.8
Integrated Townships and Real Estate Development	15.0
Feeder Roads	2.0
Feeder Rail Links	1.9
Ports (Greenfield & Augmentation)	3.0
Airports (Augmentation of Five Airports, 2 Airstrips)	1.6
Power Plants	10.0
<b>Total</b>	<b>90.2</b>

Source: DMIC Perspective Plan, 2009

These opportunities offer a large enough market for both domestic and international players to partner or compete. The opportunities in the infrastructure sector can be broadly classified as:

- a. **Consultancy:** There is a large opportunity for technical and project management consultants to undertake feasibility studies, planning, detailed project reports at the project development stage and project monitoring and management at the construction stage.
- b. **Contractors:** Construction companies can avail EPC contracts from implementing agencies and developers who subcontract construction work. Technical skills and construction technology are key to securing contracts.



- c. **Operations and Maintenance:** This is an emerging area of opportunity, and India has few established players. Each of these infrastructure sectors will require competent players to operate the assets and maintain them.
- d. **PPPs:** The policy and regulatory frameworks (concession agreements) are well established. Substantial scale-up in the last five years has created opportunities for various companies to venture as “Project Developers”.
- e. **Equipment Suppliers:** The large scale of infrastructure development, envisaged in the DMIC states, will create demand for construction and equipment, presenting an attractive business opportunity for overseas players to enter the market.
- f. **Rolling Stock Suppliers:** Increased demand for various types of passenger and freight rolling stock. Current domestic capacity caters to only half the demand.
- g. **Financiers:** Various financial institutions and PE firms have already entered the development area, including several Japanese banks. Attractive opportunity exists for FIs, PE firms, and private investors.

## Current Status

Over the last five years,<sup>6</sup> DMICDC has invested significant resources to undertake detailed planning for this project. A project development fund has been set up to fund the early-bird projects, and a loan agreement for USD 4.5 billion, with Japan has been concluded. The regional perspective plan and state-wise reports have been prepared, and MOUs have been signed with all the state governments in the DMIC region. Pre-feasibility studies for select projects have been commissioned and master plans for the identified investment regions and industrial areas are being prepared. Master planning consultants and transaction advisory firms have been empanelled. Seven nodes (one each in all DMIC states) are being developed in Phase I. However, the timelines of specific projects to be implemented under DMIC are unclear.

DMICDC has been rather proactive in adopting a few useful approaches while planning for and implementing the project. Firstly, it envisages completing all project development activities including securing relevant approvals and regulatory clearances before the projects are awarded out to the private sector. This significantly reduces the regulatory risks for the private sector concessionaire. This model can be developed into broad-based guidelines and used to advocate the adoption of similar approach by other infrastructure nodal agencies such as NHAI, DFCC etc.

Secondly, the DMICDC is making attempts to set up an information desk to assist developers, consultants, investors, and other private sector stakeholders who are keen to learn more about the opportunities in this project. In addition to that, an online tracker to showcase progress made on various projects along with relevant status is being planned. These

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<sup>6</sup> The Government of India gave an in-principle approval to the DMIC project in August 2007

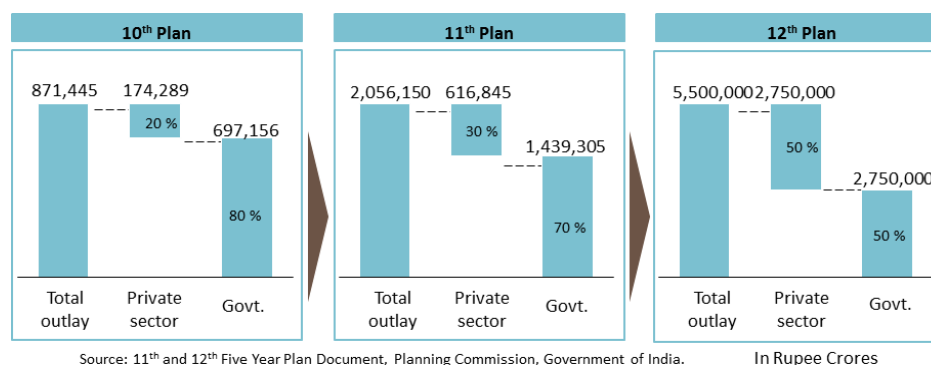
measures will go a long way in improving transparency and public confidence which is much needed for such complex projects.

Thirdly, projects under DMIC are to be implemented through the Quality and Cost Based Selection (QCBS) route instead of the more traditional least-cost or item-rate modes of procurement. This is a welcome measure and will encourage greater participation by contractors with strong credentials who can deliver projects on time.

# APPENDIX I

Critical factors that have led to the evolution of the Indian infrastructure sector:

## 1.1. Emergence of Private Sector

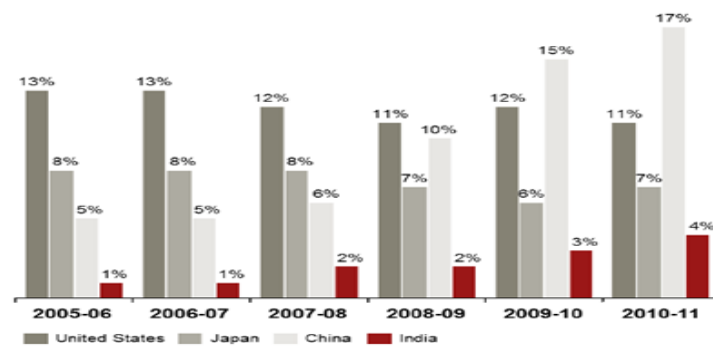


Private sector construction companies have come a long way from executing item-rate contracts to investing and co-developing complex green-field and brownfield projects, including India's largest airports, ports, expressways and power plants. The private sector has built strong technical capabilities to handle large projects, both in India and the region. The Indian private sector has grown from a handful of companies (in the late 1990s) to more than 30 large developers (with turnover above USD 500 million) and hundreds of qualified contractors. Sectors such as power and roads are witnessing the consolidation of private players. Large and established players are acquiring over-leveraged or unviable projects being handled by smaller players in order to revive them. However, this trend is not disheartening the newer private players from entering the market attracted by the USD 80-100 billion annual construction market offered under the Twelfth Plan period (2012-2017).

## 1.2. Long-Term Financing Channels

Access to international financial markets for both equity and debt for infrastructure sector has improved owing to less-restrictive External Commercial Borrowings (ECB) norms, rationalisation of tax rates on interest paid on foreign loans, automatic and unrestricted foreign direct investment in identified core infrastructure sectors, etc. However, a substantial percentage of total funds employed in the infrastructure sector are from domestic sources. India, over the last decade, has enhanced the appetite for long-term infrastructure financing in the banking system (despite the asset liability mismatches and the threat of NPAs), set up dedicated long-term financing institutions both in public and private sectors, and incentivised the growth of corporate bonds market. The share of corporate bonds as a percentage of total debt has quadrupled in a span of five years (2006-07 to 2010-11).

### Share of Corporate Bonds in Total Debt



Source: 7/2012 – DEA, Working Paper, Ministry of Finance, Government of India

Other developments such as deregulation of bank interest rates, greater participation by multilateral and bilateral funding agencies in private sector projects, and introduction of currency futures both in domestic and international trading platforms, etc. have all enhanced the ecosystem and aided the increase of channels for long-term funds in India's infrastructure sector.

### Adoption of PPPs



Source: Compiled from data available in "Status of implementation of PPP projects in India as of July 2011" by Athena Research Team

Public Private Partnerships (PPPs) have emerged as the preferred mode for development of projects both at the central and state levels. Model Concessionaire Agreements (MCA) and guidelines have been prepared for most infrastructure sectors by the Planning Commission to aid public agencies in awarding PPP projects to private sector concessionaries. The adoption of standardised documents such as MCAs and other bidding documents for the award of PPP projects have streamlined and accelerated decision making by agencies in a manner that is fair, transparent and competitive. As per the private participation in infrastructure database of the World Bank, India has over 1,017 PPP projects accounting for an investment of Rs 486,603 crore. India is second only to China in terms of number of PPP projects; and in terms of investments, it is second to Brazil. PPPs are also gaining greater acceptance in social infrastructure sectors such as water supply, waste management, skill development, etc. The

states that lead in the adoption of PPPs are Gujarat, Haryana and Kerala followed by Andhra Pradesh and Maharashtra. PPPs are expected to augment resource availability as well as improve the efficiency of infrastructure service delivery; their importance as a sustainable instrument for infrastructure development will grow in the coming years.

## APPENDIX II

Recent Developments in Key Infrastructure Sectors: Status and Challenges		
Sector	Key Developments	Challenges
<b>Power</b>	Significant capacity has been added in the Eleventh Five Year Plan (54000 MW). Energy deficit has fallen from 9.6% in the terminal year of the Tenth Plan (2006-7) to 7.9% during 2011-12; peak deficit declined from 13.8% in 2006-07 to 10.6% during the current financial year (up to December 2011).	The sector continues to grapple with serious challenges including insufficient fuel linkages, underinvestment in inter-regional transmission, inefficient distribution infrastructure, bankrupt utilities and regulatory hassles for upcoming projects.
<b>Airports</b>	In the last decade, India privatised 4 major airports including the two largest airports in the country (viz., Delhi and Mumbai). The Airports Authority of India is upgrading and modernising 35 non-metro airports with an estimated cost of USD 1 Billion. Passenger traffic has registered a growth rate of around 8-10% through most of the last decade.	The civil aviation sector continues to grapple with issues such as expensive ATF costs, inefficient airport infrastructure and under-developed cargo-handling capacities in major airports.
<b>Ports</b>	Port capacity has increased in the Eleventh Plan on account of private investment in minor ports, container terminals and dry-bulk and liquid handling facilities in the major ports. As a result, both berthing times and turn-around times have fallen.	Port sector has met only 50% of the Plan target owing to lack of adequate draft for dealing with bigger ships, insufficient rail/road linkages and poor warehousing and logistics infrastructure.

## Recent Developments in Key Infrastructure Sectors: Status and Challenges

Sector	Key Developments	Challenges
<b>Telecommunications</b>	The Indian telecom sector has witnessed significant growth over the past decade making it the second largest network in the world after China's. As in other infrastructure sectors, the role of the private sector in telecom has significantly gone up, and the share of private sector operators has increased from a meagre 5% of the market in 1999 to 86% of the telecom market in 2012.	Greater emphasis is now required to expand broadband connections, expand applications of ICT (Information and Communication Technology) and other development initiatives such as financial inclusion, e-health, skill development/education, etc.
<b>Roads</b>	Large portions of the National Highway Development Programme I & II were executed in the Eleventh Plan period. Only about 25% of the National Highways have four-or-more-lane roads, the rest are either single-lane or dual-lane. Efforts are being made to ensure all National Highways achieve a minimum standard of two-lane by the end of the Twelfth Plan and all-weather roads are made available to all villages/major habitations.	The recent round of bidding for highway projects saw extreme competition. Intense undercutting of price bids was witnessed. Now many developers and EPC companies are finding their projects non-viable at the quoted prices. Inability to handle high-traffic density, high speeds and poor riding quality are some of the other key issues.
<b>Railways</b>	Indian Railways has set for itself an ambitious target of laying 25,000 km of new lines, quadrupling capacity on 6,000 km of key routes, building dedicated freight corridors, upgrading railway stations to international standards, and constructing high-speed lines.	The sector has overall been a laggard in terms of capacities added and growth achieved. Most sections of railway operations continue to remain a state monopoly; tariff fixation has not been rationalised; and freight revenues continue to significantly cross-subsidise passenger revenues.

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