CHAPTER FIVE.
STATE BANK OF INDIA
FINANCING OF INFRASTRUCTURE IN INDIA.
# CHAPTER FIVE

STATE BANK OF INDIA FINANCING OF INFRASTRUCTURE IN INDIA

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CHAPTER FIVE

STATE BANK OF INDIA FINANCING OF INFRASTRUCTURE IN INDIA

5.1 INTRODUCTION

The Productivity, Welfare and Economic Prosperity of both rural and urban population are mostly impacted by the degree of infrastructure advancement in their areas and the infrastructure connections to division, districts, provincial and national centers of government facilities and business. Infrastructure is a public input which plays a vital role in the production process as well as the provision of information. According to Jack's Sachs', "Our safety and prosperity depend at least as much on collective decision to fight diseases, promote good science and wide spread education. Provide critical infrastructure and act in unison to help the poorest of the poor' no doubt such facilities and service are vital."

Infrastructure is a major sector that propels overall development of the Indian economy. The secretariat for infrastructure in the planning commission is involved in initiating policies that would ensure time-bound creation of world class infrastructure in the country. This section focuses on power, bridges, dams, roads and urban infrastructure development. Details of the projects, organizations, policies, timelines, schemes, spending on infrastructure are provided for the users.

Alone targeted investment in infrastructure development is about US$1 trillion, with around 56% being raised from the private sector. However, the primary responsibility for providing public services shall remain with public sector entities, including the government itself. Changing developmental needs due to liberalization and a growing population, with increasing regional and rural-urban disparities, have resulted in increasing demand for high quality, resiliency infrastructure. Government bodies whose capacity's have not been augmented over the last few decades are unable to take up large scale infrastructure.
Projects, even if funds are available. Due to continued lack of capacity public investment in infrastructure development faces significant time and cost overruns. The size of the organized construction industry in India is still small for and many contractors are unable to deliver civil works on a scale in keeping with the massive ongoing infrastructure development in the country across various sectors. The major factors that limit the construction industry include capacity constraints in delivery potential and performance, shortage of skilled and unskilled manpower, use of obsolete technologies and construction.

Equipment’s, inadequate availability of quality construction materials, etc. From the side of the employer (i.e., the executing agency), flawed practices in bid design, viz., inappropriate qualification and evaluation criteria, unequal risk allocation, low weight age to quality aspects and indecisiveness on project Parameters etc. impair effective functioning of contractors.³

The India Infrastructure Finance Company (IIFC) has since been corporative and operationalism. It will provide financial assistance through long term debt; either by way of refinance to banks and financial institutions or by directs lending to Project companies. It will lend up to 20% of the capital costs of a project. For Project appraisal and lending operations, The India Infrastructure Finance Company (IIFC) would rely on the lead banks associated with the respective projects. Built into this scheme is a preference for Public Private Partnership (PPP) projects that are awarded to private companies selected through a competitive bidding process. Such projects will be eligible for direct lending by The India Infrastructure Finance Company (IIFC), and will also receive overriding priority. This initiative addresses the need for providing long-term debt for financing infrastructure projects that typically involve long gestation periods. Debt finance for such projects should be of a sufficient tenure that enables cost recovery across the project life. Indian capital markets, however, are deficient in long-term debt instruments. Setting up of The India Infrastructure Finance Company (IIFC) is aimed at bridging the gap.⁴
After 65 years of development efforts, India is presently one of world's fastest growing economies. Lately, the country has emerged as a global economic power, the leading outsourcing destination, and a favorite of international investors. India's diverse economy encompasses traditional village farming, modern agriculture, fisheries, handicrafts, a wide range of modern industries, and a multitude of services. This book examines the current economy of India for 2012-2013. The first section of the book provides a sector-wise economic survey, covering the following sectors: Human and Natural resources, Poverty and Economic Planning, Agriculture and Rural Development, Industry and Minerals, Infrastructure Development and Services, Fiscal Policy, Monetary Policy and Credit Management, Financial Institutions and Financial Markets, Labor and Employment, Health Security, Education and Training, Empowerment of The Disadvantaged, Environmental Policy, and Foreign Trade and Investment. The second part is devoted to an economic survey of all of the 28 states of India, from the largest to the smallest. Each state has its own unique history, culture, demography, and socio-economic objectives and challenges. Hence, there are variations in their physical, social, and economic characteristics. The book also presents an economic survey of seven union territories, taken separately and in alphabetical order. Like states, union territories also exhibit diverse physical features and economic characteristics. It contains socio-economic statistics of states and union territories pertaining to population, area, birth rate, death rate, infant mortality rate, life expectancy, literacy rate, net state domestic product, per capita net state domestic product, revenue receipts, and human development index. Ministry has finalized a new national permit system with a view to provide a framework for uninterrupted movement of goods vehicles across the country.  

In 2008, 88% of the population in India had access to an improved water source, but only 31% had access to improved sanitation. In rural areas, where 72% of India's population lives, the respective shares are 84% for water and only 21% for sanitation. In urban areas, 96% had access to an improved water source and 54% to improved sanitation. Access has improved substantially since 1990 when it was estimated to stand at 72% for water and 18% for sanitation.
In 2010, the estimated based on Indian statistics that 626 million people practice open defecation. In June 2012 minister of rural development Jairam Ramesh stated India is the world's largest "Open Air Toilet". He also remarked that Pakistan, Bangladesh and Afghanistan have better sanitation records.

According to Indian norms, access to improved water supply exists if at least 40 liters/capita/day of safe drinking water are provided within a distance of 1.6 km or 100 meter of elevation difference, to be relaxed as per field conditions. There should be at least one pump per 250 persons.

Infrastructure problems were not the central focus of policy when the Reforms began in mid-1991. The agenda for reforms in the early years was understandably dominated by crisis management and the need for domestic and external stabilization. The primary focus therefore was on reducing the fiscal deficit to restore macro-economic stability and introducing a package of efficiency-oriented reforms aimed at deregulating the domestic economy, reforming trade and exchange rate policies and liberalizing foreign investment policy. Besides, infrastructure was not a significant constraint on short-term economic performance at the start of the Reform Programme because there was slack in the system with considerable scope for expanding supplies of infrastructure services in the short run through better utilization of existing capacity.\(^5\)

The first articulation of a strategy for infrastructure development as part of the reform programme is to be found in the eighth five year plan which was published at the end of 1992. Contrary to the impression conveyed by many critics that the Reforms relied excessively and unrealistically upon private investment for development of infrastructure, the strategy outlined in the plan, as the quotation below makes clear, envisaged a continuance of public sector dominance, with the private sector playing only a supplemental role. Since the scale of construction in these areas is very large and these are of direct and immediate benefit to large sections of the society, the public sector will continue to play a dominant role in the area and will have the ultimate responsibility of meeting the demands. However if private initiative comes forward to participate in creating such infrastructure like power plants, roads, bridges, social housing, and industrial estates on reasonable
terms and with full protection of peoples interest such initiatives must be positively
couraged. Investments in infrastructure are the main growth drivers of the
Construction equipment industry.

The Planning Commission estimates total infrastructure spending to be about 10% of
Gross Domestic Product (GDP) during the 12th five year plan (2012-17), up from
7.6% during the previous plan (2007-12). The Government has granted sops,
including a large number of Special Economic Zones (SEZs), to the capital goods
industry of which construction equipment is a part; Especially with an impetus
to increase exports.

Almost all global technology leaders in the construction equipment sector have a
presence in India - Either as Joint Ventures or with their own manufacturing or
marketing companies. Cumulative Foreign Direct Investment (FDI) inflows (since
April 2000) into earth moving equipment reached us$ 175 million as of January
2013.6

➤ FOUR DISTINCT SECTIONS

Section I : Macro Analysis: Overview, recent developments, policy, industry
structure and player performance, financing and cost economics, equipment and
technology market industry outlook and projections.

Section II : Trends in Key Minerals: Coal, Lignite, Bauxite, Iron ore, other
metallic minerals and Non-metallic minerals.

Section III : Leading Mining Companies: Each profile includes production trends,
project announcements and initiatives, recent contracts, expansion plan.

Section IV : Mining Projects: Review of major proposed and under
development mining - mineral- wise analysis of project pipeline (developer,
capacity, cost, location, current status and expected completion), projects by stage
and projects by state.7
KARNATAKA URBAN INFRASTRUCTURE DEVELOPMENT PROJECT

Beginning in 1995 and one of the first projects in urban development sector supported by an external development assistance in the country, this is now one of the longest sustained urban development. Projects in the State of Karnataka. The first ADB assistance (loan 1415) which was extended for the Karnataka Urban Infrastructure Development Project (KUIDP), facilitated the Second ADB assistance (loan 1704) to the state for Karnataka Urban Development and Coastal Environmental Management Project. Both these projects were executed by the then newly formed Karnataka Urban Infrastructure Development Project (KUIDP). The projects faced several challenges on the inception stage.

The works under both these projects have now been completed, and subsequently Karnataka Urban Infrastructure Development Project (KUIDP) has availed ADB assistance under Multi-Tranche Financing Facility (Loan 2312 and 2638) for the North Karnataka Urban Infrastructure Development Project (NKUIDP). The case study demonstrates the institutional development of Karnataka Urban Infrastructure Development Project (KUIDP) to become an efficient executing agency capable of delivering multiple projects across the state and maintaining project assets effectively. It also demonstrates the meticulous consultative process and Mechanism that have enhanced community Participation and Ownership.

Rajasthan Urban Infrastructure Development Project

This project, The First Engagement with the Urban Development Sector of Rajasthan was initiated under ADB assistance (loan1647) in 1998. Subsequently, the engagement has widened in ambit through ADB assistance under multi-tranche financing facility in 2007 for Rajasthan Urban Services Development Investment Program (RUSDIP), another key issue was effective preparation and designing of sub-projects, Especially in water supply as Rajasthan is an arid State. The executing newly constructed agency overcame these challenges through capacity building, initiating community participation, and building stakeholder consensus around the project outcomes. The comparatively smooth implementation of Rajasthan Urban Services Development Investment Program (RUSDIP), reflects the efficient planning by the executing agency and the gains realized from it.
There is significant demand for improving urban areas in most rapidly urbanizing states and cities. The fundamental approach to urban development in the state was to provide accessibility to basic services to people from all income levels through improved coverage, sustainable infrastructure, and a cost-recovery mechanism, creating effective rural-urban links.

It also aimed at providing housing assistance to low-income groups at affordable interest rates. On several occasions, Government of India has solicited lending assistance to be used directly as part of a mainstream central sector scheme. Under this project, the Government has sought financial assistance in the form of Loan for a very key scheme for development of roads in rural areas, known as the Pradhan Mantri Gram Sadak Yojana (PMGSY). Owing to the huge extent of roads to be covered all over India, the Scheme sought to cover specific states with components of Overseas Development Assistance (ODA) lending, including the ADB in addition to its own resources.  

**Rationale Of The State Bank Of India Financing On Infrastructure Sectored**

This aims at supporting infrastructure projects that are economically justified but fall short of financial viability. The lack of financial viability usually arises from long gestation periods and the inability to increase user charges to commercial levels. Infrastructure Projects also involve Externalities that are not adequately captured in direct financial returns to the project sponsor. Through the provision of a catalytic grant assistance of up to 20% of the capital costs, several projects may become bankable and help mobilize the much needed private capital and efficiencies.

This would be available only for infrastructure projects where private sector sponsors are selected through a process of competitive bidding. The project agreements must also adhere to best practices that would secure value for public money and safeguard user interests. The would thus incentivise the evolution of sound practices in Public Private Partnership [PPP] projects and help eliminate the pitfalls hitherto observed in several Public Private Partnership [PPP] projects where adequate ‘due diligence’ was not observed, in India and elsewhere.
Apart from the financial support to be made available under this scheme, an additional grant of up to 20% can be provided by the sponsoring ministry or state government. The Lead Financial Institution for the project shall be responsible for regular monitoring and periodic evaluation of project compliance with agreed milestones and performance levels, particularly for the purpose of grant disbursement.

Most Indians depend on on-site sanitation facilities. Recently, access to on-site sanitation have increased in both rural and urban areas. In Rural Areas, total sanitation has been successful (see below). In urban areas, a good practice is the slum sanitation program in Mumbai that has provided access to sanitation for a quarter million slum dwellers. Sewerage, where available, is often in a bad state. In Delhi the sewerage network has lacked maintenance over the Years and overflow of raw sewage in open drains is common, Due to blockage, settlements and inadequate pumping capacities. the capacity of the 17 existing Waste water treatment plants in Delhi is adequate to cater a daily production of waste water of less than 50% of the drinking water produced. Of the 2.5 billion people in the world that defecate openly, some 665 million live in India. This is of greater Concern as 88% of deaths from diarrhoea occur Because of unsafe water, inadequate sanitation and poor hygiene.  

This intervention would enable the Government to enhance private sector participation in Critical Infrastructure Sectors. By offering grant assistance of up to 20% of the project costs, The Government will be able to use its scarce budgetary resources to leverage a much larger pool of private capital. At the same time, ‘Due Diligence’ by the Government and Project Lenders would help maximize efficiency and value for public money.
State Bank Of India Initiatives:-

Government has been encouraging private parties to participate in implementing rural infrastructure projects.

In this direction;

- Banks are also involved in financing economically viable infrastructure projects in rural areas.
- These activities are in addition to the basic infrastructure facilities that are taken up by the Government (viz. Roads, Sanitation, Rural, Telephones, Drinking Water, Rural Education and Health).
- State Bank of India is a pioneer in formulation of viable schemes in rural Infrastructure projects.\(^{11}\)

State Bank Of India has been developing and implementing several schemes which aim to setting up of viable infrastructure projects in rural areas according to recent news items and other sources, to accelerate Gross Domestic Production [GDP] growth from 7% per Year (as in the 10th plan) to 9% per Year (in the 11th plan). Total Investment will need to be raised by 6% points of Gross Domestic Production [GDP], about half of this will need to be in Infrastructure: Road, Rail, Air and Water Transport, Power Generation, Transmission and Distribution, Telecommunications, Water Supply, Irrigation and Storage.

Investment in such Infrastructure will need to increase from 4.6% of Gross Domestic Production [GDP] to around 8% in the 11th plan period, totaling as much as $500 billion over the five years. Within This Total, roads will need $75-90 billion, almost all in civil works.

The success of the road investments will depend very much on the capacity of the construction industry. Whereas the Government of India recognizes that there is significant deficit in the availability of physical infrastructure across different sectors and that this is hindering Economic Development; Whereas the development of infrastructure requires large investments that cannot be undertaken out of public financing alone, and that in order to attract private capital.\(^{12}\)
As well as the Techno-Managerial efficiencies associated with it, the government is committed to promoting Public Private Partnerships (PPPs) in infrastructure development and whereas the Government of India recognizes that Infrastructure Projects may not always be financially viable because of long gestation periods and limited financial returns, And that financial viability of such projects can be improved through Government Support. Now, therefore, the Government of India has decided to put into effect the following scheme for providing financial support to bridge the viability gap of infrastructure projects undertaken through Public Private Partnerships (PPPs).

The Public Private Partnerships (PPPs) project should be from one of the following sectors:

- Roads and Bridges, Railways, Seaports, Airports, Inland Waterways;
- Power;
- Urban Transport, Water Supply, Sewerage, Solid waste management and Other physical infrastructure in Urban Areas;
- Infrastructure Projects in Special Economic Zones; and
- International convention centers and other tourism infrastructure projects;

Provided that the empowered committee may, with approval of the finance minister, add or delete sectors/sub-sectors from the aforesaid list. Over the last few years, The Indian Economy has been in a phase of unparalleled growth of about 8-10% per year, making it one of the fastest growing economies in the world. Sustaining this rate of growth will need huge investments in physical infrastructure such as Roads ($75-90 billion according to various reports), Water, Power and Urban Sectors. Preliminary estimates suggest that investment in infrastructure would need to increase from the current 4.6% of Gross Domestic Production [GDP] to about 8% during the 11th plan.
An Efficient Transportation System is critical for sustaining Economic Growth and the burgeoning demand for passenger and freight movement. Recognizing this, the Government of India (GOI) and several State Governments have launched initiatives during the past decade to modernize and improve the transport infrastructure. Starting with the 9th Five Year Plan (1997-2002), road sector expenditures have gone up from 3% of the total plan expenditure to almost 12%. These Expenditures were Primarily for National Highway and rural road development programs. In addition, Government of India [GOI], some State Governments and industry associations have taken initiatives such as Encouraging Private Sector Participation in Highway Financing, Allowing Wholly Owned Foreign Direct Investment in the sector, Establishing Training Centers for construction workers, and devising a grading/rating system for Construction firms to foster the growth and efficiency of the road construction industry.13

This study stems partly from Government of India’s concern regarding the capacity of the road construction industry to deliver, and partly from the State Bank of India’s growing need to understand the impact of the expanded road investments on the industry’s capacity in south Asia.

The study attempts to outline the entire gamut of problems and capacity constraints faced by India’s construction industry. It builds on previous studies, reports and industry-wide stakeholder surveys and workshops. It recommends key actions to the central and state governments and the industry for enhancing its capacity and efficiency.

The Indian Road Construction industry is highly unorganized and fragmented. only about 0.4% of the 250,000 contractors in India can be classed as medium to large firms (based on the number of people employed per firm). Many of the medium and large construction firms are still family owned and lack professional management and work culture. While small and medium contractors have mushroomed in the recent past, large contractors have not grown at the same rate either in size (turnover) or number.
Consequently, on the medium to large-sized national and state highway projects there are few contractors to choose from; only about 45-50 Indian contractors and about 10-12 foreign contractors. Often these contractors form joint ventures or consortia among themselves to qualify for most of these contracts in the country. Subsequently, these contractors suffer from insufficient capacity; the result is time and cost overruns, related disputes and lower quality. As such, there is a critical need for reversing the slow growth of the large contractors and for enhancing the capacity of all sizes of contracting and consulting firms.\textsuperscript{14}

**Road Transport:-**

India has an extensive road network of 3.3 million km. roads carry about 65% of freight and 80% of passenger traffic in the country. This network includes Expressways, National Highways, State Highways, Major District Roads, City Roads, Village and Rural Roads etc.

Among all the Infrastructure Sectors, Road Transport contributes the most to the country’s Gross Domestic Production [GDP]. The Transport Sector in India has contributed 6% of the national income over a period of 10 years from 1999-2000 to 2008-2009. of this, the share of road transport has increased from 63% in 2000 to 73% in 2009.

The Ministry of Road Transport and Highways (MORTH) is responsible for the development and maintenance of national highways in the country. National highways in India have a total length of 70,934 km and serve as the main road network of the country. Even Though Expressways and National Highways constitute only about 2% of the length of all roads, They carry about 40% of the road traffic. The Number of vehicles has been growing at an average of 10.16% per Annum over the Last Five Years. This strains the road infrastructure. Moreover, only about 24% of national highways have four or more lanes. This demands significant improvement in highways in india\textsuperscript{15}
In 1947, India's national highway network was just around 23,000 km. This network grew gradually as there was no special focus given to it. It was in the late 1990s that the Government realized the importance of improving the road network in India. The network of national highways has increased considerably over the last 15 years. In 1997, National Highways had a total length of 34,298 km which shot up to around 70,000 km recorded presently. The chart alongside shows the additions to the national highway network from 1997 to 2012.\textsuperscript{16}

**Yamuna ExpressWay:-**

Yamuna Expressway project between greater Noida and Agra is India's longest controlled-access expressway, developed by Jaypee Group under Public Private Partnership (PPP) Build Operate Transfer (BOT) model for a total value of us$ 2.3 billion.

The project was conceived by the Government of Uttar Pradesh in 2001 and was formally inaugurated on august 09, 2012. The Expressway cuts in half the Travel time from New Delhi to Agra, The city that is home to India's top tourist attraction, the Taj Mahal. It has undoubtedly laid a solid foundation for the accelerated all-round growth and is expected to significantly boost the Socio-Economic Development of the districts like Gautam Budh Nagar, Aligarh, Mathura and Agra located along the alignment. Leading the way for future development along the expressway is the budh International Circuit – India's first and only ‘formula one’ race track created and owned by Jaypee Sports International Limited, which hosted its first f1 race in October, 2011.\textsuperscript{17}

The National Highway Network witnessed slow growth between 1997 and 2002. This situation did not improve and the network grew a mere 16% between 2002 and 2007, and just 6% between 2007 and 2012. Since National Highways carry a major chunk of traffic, Their share in the total road network in the country must increase. In line with the Growing Traffic, It has been suggested by the working group on central roads sector that the national highway network must be at 85,000 Km by End-2017. This means a 20% rise over their current length.
Road Development is recognized as essential to sustain Indian Economic Growth. Road Development is a priority sector and the ongoing focus on the Highway Infrastructure Development is targeted to projected Annual Growth of 12-15% for passenger traffic and 15-18% for cargo traffic. The project has been attracting huge Direct Foreign Investment (FDI). Roads are the dominant mode of transportation in India today. They carry almost 90% of the country's passenger traffic and 65 percent of its freight. The density of India's highway network -- at 0.66 km of highway per square kilometers of land -- is similar to that of the United States (0.65) and much greater than China's (0.16) or Brazil's (0.20). However, Most Highways in India are narrow and congested with poor surface quality, and 40 percent of India's villages do not have access to all-weather roads.\(^{18}\)

India has the second largest road network in the world, spanning a total of 4.7 million kilometers. Roads in India bear about 85% of the country's passenger traffic and 60 percent of freight traffic. Higher individual discretionary spending has led to increasing spending on cars, motorbikes and scooters growing domestic trade flows have led to rising commercial vehicles and freight movement road’s traffic share of the total traffic in India has grown from 13.8% to 65% in freight traffic and from 15.4% to 90% in passenger traffic from 1951 to 2011.\(^{19}\)

**Roads** (total length: 4.7 million kms)

**State Highways:**
Total Length: 155,716 kilometers share: 3.3 per cent of the total roads in India

**National Highways:**
Total Length: 79,116 kilometers share: 1.7 per cent of the total roads in India

**District and Rural Roads:**
Total Length: 44,55,010 kilometers share: 95.0 per cent of the total roads in India
The Special Accelerated Road Development Programme for The North Eastern Region (SARDP-NE) is aimed at developing road connectivity between remote areas in the north eastern region with state capitals and district headquarters. The Special Accelerated Road Development Programme for The North Eastern Region (SARDP-NE) is vested with the development of double-/four-lane national highways of about 4798 kilometers and double-lining/improving about 5343 kilometers of state roads. Implementation of the road development programme will facilitate connectivity of 88 district headquarters in north eastern states to the nearest national highways.

The Project Will Be Undertaken In Three Phases:

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<tbody>
<tr>
<td>A</td>
<td>2041</td>
<td>March 2015</td>
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<td></td>
<td>2058</td>
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<tr>
<td>B</td>
<td>1285</td>
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<td></td>
<td>2438</td>
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<tr>
<td></td>
<td>2319</td>
<td>March 2017</td>
</tr>
</tbody>
</table>

The value of total roads and bridges infrastructure is expected to touch US$ 19.2 billion by 2017. The key factors responsible for driving demand in the sector have been the rise in two-wheeler and four-wheeler vehicles and increasing freight traffic. Rising per-capita incomes and a growing middle class coupled with easier access to finance and a wider price range of vehicles have boosted car sales. During 2007-14, the sales of passenger and commercial vehicles are expected to increase at a Compounded Annual Growth Rate (CAGR) of 15% and 13.5% to touch 3.5 and 0.85 million respectively.

Contractors in road construction make much smaller profits (average typical margins of 6-10%) than those engaged in construction in real estate (about 20-25%), Hydropower and industrial sectors (about 15%). These thin margins are mainly due to the delays in overall project implementation, investment climate bottlenecks and unhealthy competition. Players from other sectors find the road construction sector relatively unattractive due to its lower profit margins, management by predominantly weak public administrations, frequent contractual disputes, challenging project logistics and contract management arrangements. Consequently, whereas the industry should be gearing up to attract players from other sectors to meet the demand, in reality the reverse is happening: Existing road firms are expanding their business interests into other, more lucrative sectors.
Moreover, an increasing trend in the industry is for contractors to move up the value chain from traditional construction contracts to Build-Operate-Transfer (BOT) type projects, to Minimize Their Risks. This Is Creating a Vacuum of Good Specialist Contractors Who Can Support the Bigger Players in the Industry.20

Table: 5.1.1. Range Of Investments Required In The Infrastructure Sectors

<table>
<thead>
<tr>
<th>Sector</th>
<th>Investment Required (Rs. Billion)</th>
<th>Us$ (Billions)</th>
<th>Works As Share Of Total Cost (%)**</th>
</tr>
</thead>
<tbody>
<tr>
<td>Roads (Excludes PMGSY6/Rural Roads)</td>
<td>2,200-2,450 50</td>
<td>55* 95</td>
<td>100</td>
</tr>
<tr>
<td>Railways</td>
<td>2000-3000</td>
<td>68</td>
<td>40</td>
</tr>
<tr>
<td>Ports</td>
<td>500-850</td>
<td>11-20</td>
<td>60</td>
</tr>
<tr>
<td>Airports</td>
<td>400-500</td>
<td>9-11</td>
<td>50</td>
</tr>
<tr>
<td>Total Investments In Transport Sector</td>
<td>5100-6800</td>
<td>116-155</td>
<td></td>
</tr>
<tr>
<td>Investment Needs In Power And Other Infrastructure Sectors</td>
<td>8400-11000</td>
<td>191-250</td>
<td>40-60</td>
</tr>
<tr>
<td>Total Investment Required</td>
<td>13500-17800</td>
<td>307-405</td>
<td></td>
</tr>
</tbody>
</table>

* Inclusion of the PMGSY, other rural road programs and maintenance needs may raise this to about $75-90 billion.

** ‘total cost’ means cost of delivery of infrastructure on site, excluding government agency cost, tendering and design costs.

Table: 5.1.2. The Five Most Rapidly Growing Sectors Over 1963-2010

<table>
<thead>
<tr>
<th>Sector</th>
<th>Rate Of Growth(%)</th>
</tr>
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<tbody>
<tr>
<td>Banking Insurance &amp; Real Estate</td>
<td>22.5</td>
</tr>
<tr>
<td>Electricity &amp; Water</td>
<td>7.5</td>
</tr>
<tr>
<td>Government Services</td>
<td>11.6</td>
</tr>
<tr>
<td>Services</td>
<td>9.8</td>
</tr>
<tr>
<td>Manufacturing</td>
<td>8.9</td>
</tr>
<tr>
<td>Transport Storage And Communications</td>
<td>10.7</td>
</tr>
<tr>
<td>Agriculture</td>
<td>8.5</td>
</tr>
</tbody>
</table>

Sources: Economic Survey Reports Various Issues.
In The Year 2000, Around 40% of the 825,000 villages in India lacked all-weather access roads. This constrained economic activities and access to essential services. Nearly 74% of India’s rural population, constituting the majority of India’s poor, were not fully integrated into the national economy. The rural roads sector, which is a state subject, also lacked adequate planning and management due to poor coordination between multiple funding streams and agencies. Investing in rural roads was given low priority and viewed in isolation from the need for state and national highways.

Recognizing the critical issue of the rural road sector, The Government of India (GOI) planned to give a boost to rural connectivity. In the year 2000, It launched a nationwide program, The Pradhan Mantri Gram Sadak Yojna, (PMGSY - The Prime Minister’s Rural Roads Program) under the Ministry of Rural Development (MORD). The program envisages providing new connectivity to about 180,000 habitations through the construction of about 372,000 Kms of roads, and upgrading about 370,000 Kms of the existing core rural network to provide full farm-to-market connectivity. The total outlay for the program is 33 billion USD. The Prime Minister’s Rural Roads Program is being implemented as a 100% centrally-funded program aimed at providing all-weather connectivity to all habitations of above 500 population (250 in case of hills, desert and tribal areas). Through The Pradhan Mantri Gram Sadak Yojna, The Government of India [GOI] is endeavoring a radical departure from the past. it is enforcing more rational and Transparent Decision making, planning, and design tools; It is also helping to streamline the flow of funds through a sector wide approach for sustainable rural infrastructure development. The Central Government has formulated detailed Policy and Operational Guidelines and Set Up The National Rural Road Development Agency (NRRDA) to provide Management And Technical Support to the states.
The program has greatly enhanced the capacity of states to plan and manage rural roads by creation of state rural roads development agencies in each state. These agencies monitor the Pradhan Mantri Gram Sadak Yojna works, which are implemented by public works departments, Rural Development Department and similar agencies. Under The Pradhan Mantri Gram Sadak Yojna, a fair and transparent process for selecting habitations or clusters for connectivity was adopted to rule out patrimonial preference. The population size of the habitation was the deciding factor. Habitations with a population of more than 1000 were given priority for connectivity in the first phase of the program. After this, all habitations with a population of 500 and above would be selected for single road connectivity. However, a more generous criterion was approved for habitations in the tribal, desert and mountainous regions because of the difficult terrain. Here the criteria was lowered to a cluster size of 250 residents or more.\textsuperscript{22}

The NTPC Board Of Directors cleared an investment proposal of rs 12,532.44 crore for its STPP project at Darlipali in Sundargarh district. The project is scheduled to be commissioned by 2018. The total land requirement for Darlipali project is 1,652 acres, 1,217 acres private land and 34.47 acres forest land. Of the 1,217 acres private land needed for the main plant of the power project, The State Government Has issued possession certificate for 1,213 acres. Alienation Proposals for 339.49 acres of government land are in different stages of processing, principal secretary energy P K JENA told.

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The State will get 50% power from The Darlipali Project. The National Thermal Power Major has also committed to establish a medical college at the district headquarters of Sundargarh. Though The Center Announced That Two Super Thermal Power Projects Of 3200 Mw (4x800mw) will be established at Darlipali and Gajamara in Dhenkanal District Way Back In 2009, The Two Projects got delayed due to land acquisition problem. As Land Acquisition Hurdles delayed the two large-sized power projects, NTPC Started looking for alternative sites outside the state.23

India’s Largest Power Generation Utility has been unable to place a multi-billion dollar power generation equipment order for the proposed projects as planned because of the delays. NTPC had sought bids for around rs 22,000 crore of boilers and turbine generators in 2011 last year for four proposed projects including for the 1600 Mega Watt each Darlipali and Gajmara Projects. But it had to cancel the order due to delay in Land Acquisition, NTPC Sources Said. Apart From the two major projects, NTPC has undertaken major expansion of Talcher Thermal Power Project By adding 1,320 Mega Watt24

5.2 BANKING AGENT

A Banking Agent is a retail or postal outlet contracted by a financial institution or a mobile network operator to process clients’ transactions. Rather than a branch teller, It is the owner or an employee of the retail outlet who conducts the transaction and lets clients deposit, withdraw, and transfer funds, pay their bills, inquire about an account balance, or receive government benefits or a direct deposit from their employer. banking agents can be pharmacies, supermarkets, convenience stores, lottery outlets, post offices, and many more.

Globally, These retailers and post offices are increasingly utilized as important distribution channels for financial institutions. The Points Of Service range from post offices in the outback of Australia where clients from all banks can conduct their transactions, to Rural France where the bank credit agricole uses corner stores to provide financial services, to small lottery outlets in Brazil at which clients can receive their Social Payments and access their Bank Accounts.
Banking Agents are usually equipped with a combination of Point-Of-Sale (Pos) Card Reader, Mobile Phone, Bar-code Scanner to scan bills for bill payment transactions, Personal Identification Number (Pin) Pads, and Sometimes Personal Computers (PCs) that connect with the bank’s server using a personal dial-up or other data connection. Clients that transact at the agent use a magnetic stripe bank card or their mobile phone to access their bank account or E-Wallet respectively. Identification of customers is normally done through a Personal Identification Number, but could also involve Bio-metrics. With regard to the transaction verification, authorization, and settlement platform, banking agents are similar to any other remote bank channel.

Local Regulation will determine if Financial Institutions are allowed to work through retail outlets. Regulators generally determine what kind of, if any, Financial Institutions are permitted to contract banking agents, what products can be offered at the retail outlets, how financial institutions have to handle Cash Transport, Know Your Customer Requirements, Consumer Protection, and other operational areas.

I) Highways:

With an extensive road network of 3.3 Million Kilometers, India is the second largest in the world. Indian Roads carry about 61% of the freight and 85% of the passenger traffic. All the highways and expressways together constitute about 66,000 kilometers (only 2% of all roads), whereas they carry 40% of the road traffic. To further the existing infrastructure, Indian Government annually spends about Rs. 18000 Crores (USD 3.704 Billion).

- Developing 1000 Km Of Expressways
- Developing 8,737 Km Of Roads, Including 3,846 Km Of National Highways, In The North East
- Four-Laning 20,000 Km Of National Highways
- Four-Laning 6,736 Km On North-South And East-West Corridors
- Six-Laning 6,500 Km Of The Golden Quadrilateral And Selected National Highways
- Widening 20,000 Km Of National Highways To Two Lanes National Highways

Authority Of India (NHAI) Is The Apex Government Body For Implementing The NHDP. All Contracts Whether For Construction Or Bot Are Awarded Through Competitive Bidding.
Private Sector Participation is increasing, and is Through Construction Contracts and Build-Operate-Transfer (BOT) for Some Stretches Based On Either The Lowest Annuity Or The Lowest Lump Sum Payment From The Government

BOT Contracts Permit Tolling On Those Stretches Of The NHDP

A Large Component Of Highways is to be developed through public-private partnerships and several high traffic stretches already awarded to private companies on a bot basis.

100% FDI under the automatic route is permitted for all road development projects

100% Income Tax Exemption For A Period Of 10 Years

Grants / Viability Gap Funding For Marginal Projects By NHAI. Formulation Of Model Concession Agreement. 26

(II) Air Transport

India has historically been a consumption driven economy. Therefore, development of Roads Sector Warrants a greater priority. Funding for The Roads Sector has been at about 15%-16% Of the allocation for infrastructure. With increasing transport of Goods, Exports, Highway connectivity to ports and airports; and connectivity to major cities, Superior Expressways are being seen as the future of Road Development.

India has 125 airports, including 11 International Airports. Indian Airports handled 96 million passengers and 1.5 million tonnes of cargo in year 2006-2007, An increase of 31.4% for passenger and 10.6% for cargo Traffic Over Previous Year. The dramatic increase in air traffic for both passengers and cargo in recent years has placed a heavy strain on the country's major Airports. Passenger Traffic is projected to cross 100 million and cargo to cross 3.3 million tonnes by Year 2010. Transport Infrastructure in India is better developed in the Southern and Southwestern Parts of the country. 27

Airport Infrastructure Is Strained. Air Traffic has been growing rapidly leading to severe strain on infrastructure At Major Airports, especially in the Delhi and Mumbai Airports which account for more than 40 percent of nation’s air traffic.
**Key Government Strategies.** India’s Eleventh Five Year Plan identifies various deficits in transport sector which include inadequate Roads/Highways, Old Technology, Saturated Routes and Slow Speed On Railways, Inadequate Berths and Rail/Road Connectivity At Ports And Inadequate Runways, Aircraft Handling Capacity, Parking Space and Terminal Building at Airports. Government aims to modernize, expand, and integrate the country's transport services.

It also seeks to mobilize resources for this purpose and to gradually shift the role of Government from that of a producer to an Enabler. in recent years, the government has made substantial efforts to tackle the sector’s shortcomings and to these include:

Increasing Public Funding for Transportation in its five year plans

(i) Launching The Ambitious National Highway Development Program which has seven phases and is expected to be completed by 2012. It Includes improved connectivity between Delhi, Mumbai, Chennai And Kolkata, popularly called The Golden Quadrilateral, In The First Phase, North- South and East- West Corridors In Phase Two, Four laning of more than 12,000 Km In Phase Three, two Laning of 20,000km and six laning Of 6,500 Km Respectively in phase four and five, development of 1,000km of expressway in phase six and other Important Highway Projects In Phase Seven. Total Expected Investment Is INR 2.2 Trillion.

(ii) Accelerated Road Development Program for the north east region to provide road connectivity to all state capitals and district headquarters in the region.

(iii) Financing The Development And Maintenance Of Roads by creating a Central Road Fund (CRF) through an earmarked tax on Diesel And Petrol.

(iv) Operationalising The National Highway Authority Of India (NHAI) to act as An Infrastructure Procurer And Not Just Provider.

(v) Improving Rural Access By Launching The Pradhan Mantri Gram Sadak Yojana (Prime Minister’s Rural Roads Program).
(vi) Reducing The congestion on rail corridors along the highly trafficked golden quadrilateral and improving port connectivity by launching The National Rail Vikas Yojana (National Railway Development Program)

(vii) The Development of two dedicated freight corridors from Mumbai To Delhi And Ludhiana To Dankuni.

(viii) Improving Urban Transport Under Jawaharlal Nehru National Urban Renewal Mission (Jnnurm).

(ix) Upgrading Infrastructure and Connectivity in the country's twelve major ports by initiating the National Mariti studie.

(x) In Addition to the above, the bank is involved in the preparation of various Analytical Works (AAA) in the Transport Sector In India. These Include:  

**India Port Sector Study:** The purpose of the proposed effort is to review the demand-supply situation with respect to the port sector, identify Physical, Financial And Policy Constraints to Sector Development and Suggest Mitigation Measures for the same.

**India Construction Industry Study:** Given The Large Development Programs being launched to support the rapidly Growing Economy, The Supply Side Constraints in terms of the construction industry capacity are serious causes of concern. The Study reviews these limitations and suggest mitigation measures. This study has produced two outputs titled "Indian road construction industry: ready for growth?" me development program (NMDP). Privatization and Expansion of the Mumbai and New Delhi Airports and Development Of New International Airports at Hyderabad and Bangalore.

Enhancing Sector Capacity and improving efficiencies through clear policy directive for Greater Private Sector Participation. Large parts of the NHDP and NMDP are to be executed through Public Private Partnerships (PPP).
World Bank Support
The World Bank has been a major investor in the Transport Sector in India. At present, it has ten projects in transport portfolio which include seven State Road Projects and one each for National Highway, Rural Road and Urban Transport with total loan commitments for the transport sector in India as US$3.48 Billion. The main activities include Rural Roads Programmes, State Road Projects, Mumbai Urban Transport Projects, Sustainable Urban Transport Projects.

Rural Roads Program: The Project supports the PMGSY in providing all weather roads to villages in four states – Uttar Pradesh, Jharkhand, Rajasthan and Himachal Pradesh.

State Roads Projects: State Highways are being upgraded in the states of Kerala, Mizoram, Uttar Pradesh, Tamil Nadu, Punjab, Himachal Pradesh, Orissa and Andhra Pradesh.

Mumbai Urban Transport Project: The Project aims to improve transportation in the Mumbai Metropolitan region by fostering the development of an efficient and sustainable urban transport system - suburban rail, bus and link roads - and building effective institutions.

Sustainable Urban Transport Project: The project aims to promote environmentally sustainable urban transport in various cities and support implementation of the India National Urban Transport Policy (NUTP).

While the State Bank of India will continue to support the upgrading and development of roads and highways in the country, it plans to scale up its involvement in railways and urban transportation. Similarly, the story in the case of airports would have been very different but for bank funding. All the new airports I.E. at Bangalore, Delhi and Hyderabad as well as renovation of existing airports at Kolkata and Chennai have been made possible by Bank Financing. Funds have also been provided by banks indirectly to the Government by Funding the Airports Authority of India and large number of Government Companies and Contractors in the Infrastructure Space. But for this model of financing, Infrastructure Development...
in the country would have lagged behind even further. It is not useful to shift the
debate and say all regulation can be done by the respective regulators as this only
opens the space for regulatory arbitrage. We need to take a holistic view of
regulation. Just because there are different regulators in the Financial Sector,
Regulation need not be fragmented.

It is not my case that CRR be abolished entirely tomorrow. However, it does need to
be phased out within a reasonable time frame as impounding of this large quantum
of lendable resources in a capital scarce economy and with vast requirement for
infrastructure, does not seem to stand to reason. Secondly, The RBI needs to
consider paying interest on the impounded funds at a rate corresponding at least to
the savings bank rate if not to the Repo Rate or the Reverse Repo Rate.

(III) Communication

India’s Telecommunication Network is the second largest in the world based on
the total number of telephone users (Both Fixed and Mobile Phone). It has one of the
lowest call tariffs in the world enabled by the mega telephone networks and hyper-
competition among them. It has the world's third-largest internet user-base.
According to The Internet and Mobile Association of India (IAMAI), The Internet user
base in the country stood at 190 million at the end of June, 2013. Major sectors of
the Indian telecommunication industry are telephony, internet and television
broadcasting.

Telephone Industry in the country which is in an on gonging process of
transforming into next generation network, employs an extensive system of
modern network elements such as digital telephone exchanges, mobile switching
centers, media gateways and signalling gateways At the core, interconnected by a
wide variety of transmission systems using Fibre-optics or microwave radio relay
networks. The access network, which connects the subscriber to the core, is highly
diversified with different copper-pair, Optic-Fibre and Wireless Technologies. DTH, a
relatively new broadcasting technology has attained significant popularity in the
television segment. The introduction of private FM has given a fillip to The Radio
Broadcasting In India. Telecommunication in India has greatly been supported by the
INSAT system of the country, one of the largest domestic satellite systems in the world. India possesses a diversified communications system, which links all parts of the country by telephone, internet, radio, television and satellite.

Indian Telecom Industry underwent a high pace of market liberalization and growth since the 1990s and now has become the world's most competitive and one of the fastest growing telecom markets. The industry has grown over twenty times in just ten years, from under 37 million subscribers in the year 2001 to over 846 million subscribers in the year 2011. India has the world's second-largest mobile phone user base with over 929.37 million users as of May 2010. It has the world's third-largest internet user-base with over 137 million as of June 2010.

The total revenue of the Indian telecom sector grew by 7% to ₹2832 billion (US$46 Billion) for 2010 Financial Year, while revenues from Telecom Equipment Segment stood at ₹1170 Billion (US$19 Billion).

Telecommunication has supported the socioeconomic development of India and has played a significant role to narrow down the rural-urban digital divide to some extent. It has also helped to increase the transparency of governance with the introduction of E-Governance in India. The government has pragmatically used modern telecommunication facilities to deliver mass education programmes for the rural folk of India.30

The history of Indian telecom can be started with the introduction of telegraph. The Indian postal and telecom sectors are one of the world's oldest. In 1850, the first experimental electric telegraph line was started between Calcutta and diamond Harbour. In 1851, it was opened for the use of the British East India Company. The Posts and Telegraphs department occupied a small corner of the Public Works Department. Subsequently, the construction of 4,000 miles (6,400 km) of telegraph lines connecting Kolkata (then Calcutta) and Peshawar in the North along with Agra, Mumbai (then Bombay) through Sindwa Ghats, and Chennai (then Madras) in the south, as well as Otacamund and Bangalore was started in November 1853. William O'Shaughnessy, who pioneered the telegraph and telephone in India, belonged to the Public Works Department, and worked towards the development...
of telecom throughout this period. A Separate department was opened in 1854 when telegraph facilities were opened to the public.

In 1880, Two telephone companies namely the oriental telephone company Limited and the Anglo-Indian telephone company limited. Approached the Government of India to establish telephone exchanges in India. The permission was refused on the grounds that the establishment of telephones was a government monopoly and that The Government itself would undertake the work. in 1881, The Government later reversed its earlier decision and a licence was granted to the oriental telephone company limited of England for opening telephone exchanges at Calcutta, Bombay, Madras and Ahmedabad and the first formal telephone service was established in the country. On 28 January 1882,

Major E. Baring, Member of the Governor General of India’s Council declared open the telephone exchanges in Calcutta, Bombay and Madras. The Exchange in Calcutta named the "Central Exchange" had a total of 93 subscribers in its early stage. Later That year, Bombay also witnessed the opening of a telephone exchange.  

**Development of Broadcasting:**
Radio Broadcasting was initiated in 1927 but became state responsibility only in 1930. In 1937 It was given the name all India radio and since 1957 it has been called *akashvani*. Limited duration of television programming began in 1959, and complete broadcasting followed in 1965. the ministry of information and broadcasting owned and maintained the audio-visual apparatus—including the television channel *doordarshan*—in the country prior to the economic reforms of 1991. In 1997, an autonomous body was established in the name of *prasar bharti* to take care of the public service broadcasting under the *Prasar Bharti act*. All India radio and *Door-Darshan*, which earlier were working as media units under the ministry of information and broadcasting became constituents of the body.
Pre-Liberalisation Statistics:
While all the major cities and towns in the country were linked with telephones during
the British period, the total number of telephones in 1948 numbered only around
80,000. Post independence, growth remained slow because the telephone was seen
more as a status symbol rather than being an instrument of utility. The number of
telephones grew leisurely to 980,000 in 1971, 2.15 million in 1981 and 5.07 million in
1991, The year economic reforms were initiated in the country.

In 1997, the government set up TRAI (Telecom Regulatory Authority Of India) which
reduced the interference of government in deciding Tariffs And Policy Making. The
political powers changed in 1999 and the New Government under the leadership of
Atal Bihari Vajpayee was more pro-reforms and introduced better Liberalisation
Settlement and Appellate Tribunal (TDSAT) through an amendment of the TRAI Act,
1997. The primary objective of Telecom Disputes Settlement and Appellate
Tribunal's (TDSAT's) establishment was to release TRAI (Telecom Regulatory
Authority Of India) from adjudicatory and dispute settlement functions in order to
strengthen The Regulatory Framework. Any dispute involving parties like Licensor,
Licensee, Service Provider and Consumers are resolved by Telecom Disputes
Settlement and Appellate Tribunal (TDSAT). Moreover, any direction, order or
decision of Telecom Regulatory Authority Of India can be challenged by appealing in
Telecom Disputes Settlement and Appellate Tribunal (TDSAT) The Government
Corporatized The operations wing of Department of Telecommunication on 1
October 2000 and named it as Department Of Telecommunication Services (DTS)
which was later named as Bharat Sanchar Nigam Limited (BSNL). The proposal of
raising the stake of foreign investors from 49% to 74% was rejected by The Opposite
Political Parties and Leftist Thinkers. Domestic business groups wanted the
government to privatise Videsh Sanchar Nigam Limited. Finally In April 2002, The
Government decided to cut its stake of 53% to 26% in Videsh Sanchar Nigam
Limited and to throw it open for sale to private enterprises. Tata finally took 25%
stake in Videsh Sanchar Nigam Limited. In March 2008 The total Global System for
Mobile [GSM] and Code Division Multiple Access [CDMA] mobile subscriber base in
the country was 375 Million, which represented a nearly 50% growth when compared
with previous year. As The Unbranded Chinese Cell Phones which do not have
International Mobile Equipment Identity (IMEI) Numbers pose a serious security risk to the Country, Mobile Network Operators Therefore suspended the usage of around 30 Million Mobile Phones (About 8% Of All Mobiles In The Country) by 30 April 2010. Phones without valid International Mobile Equipment Identity (IMEI) cannot be connected to Cellular Operators. 5–6 Years The average monthly subscribers additions were around 0.05 to 0.1 Million only and the total mobile subscribers base In December 2002 stood at 10.5 Millions. However, after a number of proactive initiatives taken by Regulators and Licensors, The total number of mobile subscribers has increased rapidly to over 929 million subscribers as of May 2012.\(^{32}\)

India has opted for the use of both the GSM (Global System for Mobile Communications) And CDMA (Code-Division Multiple Access) technologies in the mobile sector. In addition to Landline and Mobile Phones, some of the companies also provide the Wireless Land Line [WLL] Service. The Mobile Tariffs in India have also become lowest in the world. A new mobile connection can be activated with a monthly commitment of US$0.15 only. In 2005 alone additions increased to around 2 Million per Month In 2003–04 and 2004–05. The Total revenue in the telecom service sector was ₹867.2 billion (US$14.1 Billion) in 2005–06 As against ₹716.74 billion (Us$11.7 Billion) in 2004–2005, Registering a growth of 21% with estimated revenue of Financial Year ’2011 Of ₹8.35 billion (US$140 Million). The total investment in the telecom services sector reached ₹2006 billion (US$32.7 Billion) In 2005–06, up from ₹1788 billion (us$29.1 billion) in the previous fiscal. Telecommunication is the lifeline of the rapidly growing information technology industry. Internet Subscriber base has risen to more than a 121 million in 2011.\(^{54}\) out of this 11.47 million were broadband connexions. More than a billion people use the internet globally. Under The Bharat Nirman Programme, The Government Of India will ensure that 66,822 revenue villages in the country, which have not yet been provided with a Village Public Telephone (VPT), will be connected. However doubts have been raised about what it would mean for the poor in the country.
Also Known As the *Door Sanchar Vibhag*, This department concerns itself with policy, licensing and coordination matters relating to telegraphs, telephones, wireless, data, facsimile and telemetric services and other like forms of Communications. It also looks into the administration of laws with respect to any of the matters specified, namely:

- The Indian Telegraph Act, 1885 (13 Of 1885)
- The Indian Wireless Telegraphy Act, 1940 (17 Of 1933)
- The Telecom Regulatory Authority Of India Act, 1997 (24 Of 1997)

**Public Sector Units**

- Bharat Sanchar Nigam Limited
- Indian Telephone Industries Limited
- Mahanagar Telephone Nigam Limited
- Telecommunications Consultants India Limited

The *Indian Telecommunications Service*, widely known as its, and earlier known as ‘Telegraph Engineering Service Class I’ (TES Class I) is an organised civil service of government of India. The Appointment to this service is done through combined engineering services exam held every year by Union Public Service Commission (UPSC) Of India. Its is A group ‘A’ Central Civil Service (Gazetted) Post of The Union of India. The service was created to meet the technical and managerial functions of the government in areas related to telecommunications. The Department of Telecommunications (DOT) had been run for years by this permanent cadre of technical civil servants called the Indian Telecom Service (ITS).

The Officers of its are working in senior management and administrative positions in The Department Of Telecommunications (DOT), Telecom Enforcement Resource And Monitoring (TERM Cells), Bharat Sanchar Nigam Limited (BSNL), Mahanagar Telephone Nigam (MTNL), Telecommunications Consultants India Limited (TCIL), Telecom Regulatory Authority Of India (TRAI), Telecom Disputes Settlement And Appellate Tribunal (TDSAT), Unique Identification Authority Of India (UID), Central Vigilance Commission (CVC) Etc. At Present, its officers are also working in many other central and state government assignments on deputation.³³
Table 5.2.1: Communications In India

<table>
<thead>
<tr>
<th>Revenue (Total)</th>
<th>USD 33,350 Million</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Telephony</strong></td>
<td></td>
</tr>
<tr>
<td>Telephone Subscribers (Total) (2013)</td>
<td>915.19 Million (December 2013)</td>
</tr>
<tr>
<td>Fixed Lines (December 2013)</td>
<td>28.89 Million</td>
</tr>
<tr>
<td>Mobile Phones (2013)</td>
<td>886.3 Million</td>
</tr>
<tr>
<td>Monthly Telephone Additions (Net) (December 2013)</td>
<td>5.5 Million</td>
</tr>
<tr>
<td>Teledensity (2013)</td>
<td>74.02%</td>
</tr>
<tr>
<td>Rural Teledensity</td>
<td>42.67%</td>
</tr>
<tr>
<td><strong>Internet Access</strong></td>
<td></td>
</tr>
<tr>
<td>Percent Household Access (Total), 2012</td>
<td>10.2% Of Households (137 Million)</td>
</tr>
<tr>
<td>Percent Broadband Household Access</td>
<td>1.18% Of Households (14.31 Million)</td>
</tr>
<tr>
<td>Broadband Internet Users</td>
<td>55.20 Million (December 2013)</td>
</tr>
<tr>
<td>Internet Service Providers (2012)</td>
<td>155</td>
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<tr>
<td><strong>Broadcasting</strong></td>
<td></td>
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<tr>
<td>Television Broadcast Stations (2009)</td>
<td>1400</td>
</tr>
<tr>
<td>Radio Broadcast Stations (1997)</td>
<td>800</td>
</tr>
</tbody>
</table>

(IV) Energy Sector

After a delay of nearly five years, The National Thermal Power Corporation (NTPC) approved an investment of over Rs 12,500 crore for setting up of 1600 Mega Watt Super Thermal Power Project (STPP) in Sundargarh District. The National Thermal Power Corporation (NTPC) board of directors cleared an investment proposal of Rs 12,532.44 crore for Its Super Thermal Power Project (STPP) Project at Darlipali in Sundargarh District in a meeting. The project is scheduled to be commissioned by 2018. The Total Land requirement for Darlipali project is 1,652 acres 1,217 acres private land and 34.47 acres forest land.
Of The 1,217 acres private land needed for the main plant of the power project, the State Government has issued possession certificate for 1,213 Acres. Alienation proposals for 339.49 acres of government land are in different stages of processing, principal secretary energy PK Jena told this paper. Notification under section 4 (1) of Land acquisition act has been issued for 32.36 acres of private land required for Rehabilitation and Resettlement Colony. Moreover, administrative approval has been issued for acquisition of 55 acres private Land for the Merry Go Round (MGR) system to carry coal to the plant. Jena further said that process has also been initiated for conversion of the forest land.

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Though the centre announced that two super thermal power projects of 3200 mw (4x800mw)will be established at Darlipali and Gajamara In Dhenkanal district way back in 2009, The Two projects got delayed due to land acquisition problem. As land acquisition hurdles delayed the two large-sized power projects, Ntpc Started Looking for Alternative Sites outside the State.

India’s largest power generation utility has been unable to place a multi-billion dollar power generation equipment order for the proposed projects as planned because of the delays. National Thermal Power Corporation (NTPC) had sought bids for around Rs 22,000 crore of boilers and turbine generators in 2011 last year for four proposed projects including for the 1600 mw each Darlipali and Gajamara projects. But it had to cancel the order due to delay in land acquisition, National Thermal Power Corporation (NTPC) sources said. Apart from the two major projects, National Thermal Power Corporation (NTPC) has undertaken major expansion of older thermal power project by adding 1,320 Mega Watt. The household sector is the second largest consumer of energy In India after the Industrial Sector. 71% India's households use solid fuels for cooking. More Than 60% of Indian households
depend on traditional sources of energy like Fuel-Wood, Dung and Crop residue for meeting their cooking and heating needs. The Proportion of Population that has dietary energy consumption below 2100/2400 kcal in India tends to rise since 1987-88 with about 64% below the norm in 1987-88 increasing to 76% in 2004-05.

The Electricity Sector in India had an installed capacity of 237.742 Giga Watt As Of February 2014, The world's fourth largest. Captive power plants generate an additional 39.375 Giga watt. Non renewable power plants constitute 87.55% of the installed capacity, and renewable power plants constitute the remaining 12.45% of total installed capacity. India generated around 911 Billion Units (911,652 Million units i.e. 911 terawatt-hours (TWH)) of electricity (excluding electricity generated from renewable and captive power plants) during the 2012–13 fiscal. The total annual generation of electricity from all types of sources was 1053.9 terawatt-hours (TWH) in 2010.

In Terms of fuel, coal-fired plants account for 59% Of India's installed electricity capacity, compared to South Africa's 92%; China's 77%; and Australia's 76%. After Coal, Renewable hydropower accounts for 17%, renewable energy for 12% and natural gas for about 9%. In December 2011, over 300 million Indian citizens had no access to frequent electricity. Over one third of India's rural population lacked electricity, as did 6% of the urban population. Of those who did have access to electricity in India, the supply was intermittent and unreliable. In 2010, blackouts and power shedding interrupted irrigation and manufacturing across the country. States such as Gujarat, Madhya Pradesh and others provide continuous power supply.

The Per Capita average annual domestic electricity consumption in India in 2009 was 96 KWH in rural areas and 288 KWH in urban areas for those with access to electricity, in contrast to the worldwide per capita annual average of 2600KWHand 6200 KWH in the European union. India's total domestic, agricultural and industrial per capita energy consumption estimate varies depending on the source. Two sources place it between 400 to 700 KWH in 2008–2009. As of January 2012, one report found the per capita total consumption in India to be 778 KWH.
India currently suffers from a major shortage of electricity generation capacity, even though it is the world's fourth largest energy consumer after United States, China and Russia. The international energy agency estimates India will add between 600 Gigawatt to 1200 Gigawatt of additional new power generation capacity before 2050. This added new capacity Is Equivalent to the 740 GW of Total Power Generation Capacity of European Union (Eu-27) in 2005. The technologies and fuel sources India adopts, as it adds this electricity generation capacity, may make significant impact to global resource usage and environmental issues.

India's electricity sector is amongst the world's most active players in renewable energy utilization, especially wind energy. as of December 2013, India had an installed capacity of about 29.5 Gigawatt of renewal technologies-based electricity, exceeding the total installed electricity capacity in Austria by all technologies. According to some ambitious estimates, India has 10,600 Mega Watt of potential in the geothermal provinces but it still needs to be exploited.

India's network technical losses are 23.65% in 2013, compared to world average of less than 15%. The government has pegged the national Transmission And Distribution [T&D] losses at around 24% For the year 2011 & has set a target of reducing them to 17.1% by 2017 & to 14.1% by 2022. A high proportion of non-technical losses are caused by illegal tapping of lines, and faulty electric meters that underestimate actual consumption also contribute to reduced payment collection. A case study in Kerala estimated that replacing faulty meters could reduce distribution losses from 34% to 29%.key implementation challenges for India's electricity sector include new project management and execution, ensuring availability of fuel quantities and qualities, lack of initiative to develop large coal and natural gas resources present in India, Land Acquisition, Environmental clearances at state and central government level, and training of skilled manpower to prevent talent shortages for operating latest technology plants. 36
### Table 5.2.2. Growth of Installed Capacity In India

<table>
<thead>
<tr>
<th>Installed Capacity As On</th>
<th>Thermal (in Mw)</th>
<th>Nuclear (in Mw)</th>
<th>Renewable (in Mw)</th>
<th>Total (in Mw)</th>
<th>% Growth (On Yearly Basis)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Coal</td>
<td>Gas</td>
<td>Diesel</td>
<td>Sub-Total Thermal</td>
<td>Hydel</td>
</tr>
<tr>
<td>31-12-47</td>
<td>756</td>
<td>-</td>
<td>98</td>
<td>854</td>
<td>-</td>
</tr>
<tr>
<td>31-12-50</td>
<td>1,004</td>
<td>-</td>
<td>149</td>
<td>1,153</td>
<td>-</td>
</tr>
<tr>
<td>31-03-56</td>
<td>1,597</td>
<td>-</td>
<td>228</td>
<td>1,825</td>
<td>-</td>
</tr>
<tr>
<td>31-03-61</td>
<td>2,436</td>
<td>-</td>
<td>300</td>
<td>2,736</td>
<td>-</td>
</tr>
<tr>
<td>31-03-66</td>
<td>4,417</td>
<td>137</td>
<td>352</td>
<td>4,903</td>
<td>-</td>
</tr>
<tr>
<td>31-03-74</td>
<td>8,652</td>
<td>165</td>
<td>241</td>
<td>9,058</td>
<td>640</td>
</tr>
<tr>
<td>31-03-79</td>
<td>14,875</td>
<td>168</td>
<td>164</td>
<td>15,207</td>
<td>640</td>
</tr>
<tr>
<td>31-03-85</td>
<td>26,311</td>
<td>542</td>
<td>177</td>
<td>27,030</td>
<td>1,095</td>
</tr>
<tr>
<td>31-03-90</td>
<td>41,236</td>
<td>2,343</td>
<td>165</td>
<td>43,764</td>
<td>1,565</td>
</tr>
<tr>
<td>31-03-97</td>
<td>54,154</td>
<td>6,562</td>
<td>294</td>
<td>61,010</td>
<td>2,225</td>
</tr>
<tr>
<td>31-03-02</td>
<td>62,131</td>
<td>11,163</td>
<td>1,135</td>
<td>74,429</td>
<td>2,720</td>
</tr>
<tr>
<td>31-03-07</td>
<td>71,121</td>
<td>13,692</td>
<td>1,202</td>
<td>86,015</td>
<td>3,900</td>
</tr>
<tr>
<td>31-12-10</td>
<td>138,213</td>
<td>20,381</td>
<td>1,200</td>
<td>159,794</td>
<td>4,780</td>
</tr>
</tbody>
</table>

### Table 5.2.3. Growth of electricity consumption in India

<table>
<thead>
<tr>
<th>Consumption As On</th>
<th>Total (In Gwh)</th>
<th>Domestic</th>
<th>Commercial</th>
<th>Industrial</th>
<th>Traction</th>
<th>Agriculture</th>
<th>Misc</th>
<th>% Of Total</th>
<th>Per-Capita Consumption (In KWH)</th>
</tr>
</thead>
<tbody>
<tr>
<td>31-12-47</td>
<td>4,182</td>
<td>10.11%</td>
<td>4.26%</td>
<td>70.78%</td>
<td>6.62%</td>
<td>2.99%</td>
<td>5.24%</td>
<td>16.3</td>
<td></td>
</tr>
<tr>
<td>31-12-50</td>
<td>5,610</td>
<td>9.36%</td>
<td>5.51%</td>
<td>72.32%</td>
<td>5.49%</td>
<td>2.89%</td>
<td>4.44%</td>
<td>18.2</td>
<td></td>
</tr>
<tr>
<td>31-03-56</td>
<td>10,150</td>
<td>9.20%</td>
<td>5.38%</td>
<td>74.03%</td>
<td>3.99%</td>
<td>3.11%</td>
<td>4.29%</td>
<td>30.9</td>
<td></td>
</tr>
<tr>
<td>31-03-61</td>
<td>16,804</td>
<td>8.88%</td>
<td>5.05%</td>
<td>74.67%</td>
<td>2.70%</td>
<td>4.96%</td>
<td>3.75%</td>
<td>45.9</td>
<td></td>
</tr>
<tr>
<td>31-03-66</td>
<td>30,455</td>
<td>7.73%</td>
<td>5.42%</td>
<td>74.19%</td>
<td>3.47%</td>
<td>6.21%</td>
<td>2.97%</td>
<td>73.9</td>
<td></td>
</tr>
<tr>
<td>31-03-74</td>
<td>55,557</td>
<td>8.36%</td>
<td>5.38%</td>
<td>68.02%</td>
<td>2.76%</td>
<td>11.36%</td>
<td>4.13%</td>
<td>126.2</td>
<td></td>
</tr>
<tr>
<td>31-03-79</td>
<td>84,005</td>
<td>9.02%</td>
<td>5.15%</td>
<td>64.81%</td>
<td>2.60%</td>
<td>14.32%</td>
<td>4.10%</td>
<td>171.6</td>
<td></td>
</tr>
<tr>
<td>31-03-85</td>
<td>124,569</td>
<td>12.45%</td>
<td>5.57%</td>
<td>59.02%</td>
<td>2.31%</td>
<td>16.83%</td>
<td>3.83%</td>
<td>228.7</td>
<td></td>
</tr>
<tr>
<td>31-03-90</td>
<td>195,098</td>
<td>15.16%</td>
<td>4.89%</td>
<td>51.45%</td>
<td>2.09%</td>
<td>22.58%</td>
<td>3.83%</td>
<td>329.2</td>
<td></td>
</tr>
<tr>
<td>31-03-97</td>
<td>315,294</td>
<td>17.53%</td>
<td>5.56%</td>
<td>44.17%</td>
<td>2.09%</td>
<td>26.65%</td>
<td>4.01%</td>
<td>464.6</td>
<td></td>
</tr>
<tr>
<td>31-03-02</td>
<td>374,670</td>
<td>21.27%</td>
<td>6.44%</td>
<td>42.57%</td>
<td>2.16%</td>
<td>21.80%</td>
<td>5.75%</td>
<td>671.9</td>
<td></td>
</tr>
<tr>
<td>31-03-07</td>
<td>525,672</td>
<td>21.12%</td>
<td>7.65%</td>
<td>45.89%</td>
<td>2.05%</td>
<td>18.84%</td>
<td>4.45%</td>
<td>559.2</td>
<td></td>
</tr>
<tr>
<td>31-12-11</td>
<td>710,673</td>
<td>21.56%</td>
<td>8.96%</td>
<td>45.23%</td>
<td>1.88%</td>
<td>18.16%</td>
<td>4.21%</td>
<td>813.3</td>
<td></td>
</tr>
</tbody>
</table>

Current India portfolio as on June 30, 2010

Institutional Development by setting up a rural roads development agency to undertake the work in a program mode at the state-level participation of people’s representatives at all stages of planning and proposal formulation for greater community ownership and support a three-tier quality control mechanism to achieve high quality through regular and random checks by professionals adoption of the environmental code of practice to avoid or minimize adverse environmental impact setting up operational guidelines, norms and standards at various levels of project implementation better human resource development through capacity building, skill-enhancement and clarity of role inclusion of a five-year maintenance clause in all road building contracts from the date of completion of a particular road complete transparency in contractual bidding and awarding process.  

The projects specific objectives were to;  
1) Finance investments needed to meet power demand and improve the operational efficiency in the sub-sector.  
2) Reform the organization structure of the power sub-sector to enable the operating entities to function efficiently and on a commercially sustainable basis.  
3) Create a legal and regulatory environment necessary for private sector participation in the supply of electricity.  
4) Support Government of India’s adoption of economic pricing of both electricity and petroleum products and implementation of demand and supply-side efficiency improvement measures; and  
5) Develop indigenous geothermal energy resources and a strategy for sustainable household and rural energy development. The project will consist of sector reform and other institutional support. Efficiency improvement, power system expansion, geothermal resource development; and future project preparation.
**Railways:-**

Indian railways is one of the largest railways under single management. It carries some 17 million passengers and 2 million tons of freight a day in year 2007 and is one of the world’s largest employers. The railways play a leading role in carrying passengers and cargo across India's vast territory. However, most of its major corridors have capacity constraint requiring capacity enhancement plans.

**Ports:-**

India has 12 major and 187 minor and intermediate ports along its more than 7500 km long coastline. These ports serve the country’s growing foreign trade in petroleum products, iron ore, and coal, as well as the increasing movement of containers. Inland water transportation remains largely undeveloped despite India’s 14,000 kilometers of navigable rivers and canals.

**In the transport sector in India include:**

**India port sector study:** the purpose of the proposed effort is to review the demand-supply situation with respect to the port sector, identify physical, financial and policy constraints to sector development and suggest mitigation measures for the same.

**India construction industry study:** given the large development programs being launched to support the rapidly growing economy, the supply side constraints in terms of the construction industry capacity are a serious cause of concern. The study reviews these limitations and suggest mitigation measures. This study has produced two outputs titled Indian road construction industry ready for growth development program. 40

The government provides various incentives for private and foreign sector investment in the roads sector. 100% Foreign Direct Investment (FDI) under the automatic route is allowed for support services to land trim India as elsewhere, the main element of road investment is civil works – typically 95% of the road sector budget. The success of road sector investments therefore depends on the capacity and capability of the Indian road construction industry. However, even as the magnitude of works has gone up significantly in the last decade, the industry has not kept pace with this growth, as evidenced by the under-utilization of funds allocated to
road projects1 and perennial time and cost overruns on national and state highway projects2. The industry is not yet geared up to meet the potential expanded volume of work on future road infrastructure projects. Furthermore, it faces evolving demands in the form of bigger projects involving more demanding technology and complex design, and requiring more sophisticated execution capabilities.

at the same time, as it competes for skilled manpower with other booming sectors, the road industry faces increasing turnover of its experienced staff, dwindling appeal to fresh talent, and several other constraints in investment climate that inhibit its operations and attractiveness to firms, both domestic and foreign. These issues pose major risks to the planned rapid catch-up on road sector investments – risks that need to be addressed if the government’s development objectives are to be met. An sport such as operation of highway bridges, toll roads, and vehicular tunnels; services incidental to transport such as cargo handling is incidental to land transport; construction and maintenance of roads, bridges; and construction and maintenance of roads and highways offered on Build-Operate-Transfer (BOT) basis, including collection of toll.

Highway-widening projects qualify for the 10-year tax break under section 80 is of the Income Tax (IT) act. Other policy initiatives for attracting private investment are government to provide capital grant up to 40% of project cost to enhance viability on a case-to-case basis, 100% tax exemption for five years and 30% relief for next five years, which may be availed of in 20 years and concession period allowed up to 30 years. Foreign Direct Investment (FDI) in construction activities (including roads and highways) sector from April 2000 to July 2010 in India was USD 8.3 billion. This amounted to 6.4% of the total Foreign Direct Investment (FDI) inflows, according to data released by Department of Industrial Policy and Promotion (DIPP), which formulates the Foreign Direct Investment (FDI) policy and is part of the ministry of commerce & industry. With the government permitting 100% Foreign Direct Investment (FDI) in the roads sector, most foreign investors in the Indian roads sector have formed consortiums with Indian companies to participate in the development of road projects in the country. As a result, construction companies are now being rewarded with large order books and portfolios of Build-Operate-Transfer (BOT) projects.41
In addition to the policy benefits, the government has announced several incentives to attract private sector participation. These include government to bear the cost of the project feasibility study, land for the right of way and way side amenities, shifting of utilities, environment clearance, cutting of trees, etc; duty free import of high capacity and modern road construction equipments; declaration of the road sector as an industry; easier external commercial borrowing norms; right to retain toll; increase in the overseas borrowing amount of infrastructure sectors to USD 500 million from USD 100 million; and full exemption from basic customs duty to bio-asphalt and specified machinery for application in the construction of national highways. The electrical equipment industry was worth US$ 13.2 billion in Financial Year 10. The market expanded at a Compound Annual Growth Rate (CAGR) of 11.5% over Financial Year 07-10. The generation equipment industry in India is expected to increase to US$ 27.5 billion by 2022 from US$ 5.7 billion in 2011.

A boiler is the major segment, accounting for 67.9% of the total revenues in Financial Year 10. Turbines accounted for 21.3%, while generators accounted for the remaining 10.8%. Exports of electrical machinery increased to US$ 5.09 billion in Financial Year 10 from US$ 5.06 billion in Financial Year 10. Transformers and generators were the primary drivers of increase in exports.

India’s energy requirement expanded at a Compound Annual Growth Rate (CAGR) of 6.8 % over Financial Year 06–13 to reach 998.1 billion units. By 2022, installed power capacity in India is expected to reach 350 Giga Watt (GW) from 180 Giga Watt (GW) in 2011 due to increasing industrialization and economic development.

The Government of India (GOI) has de-licensed the electrical machinery sector and has allowed 100% Foreign Direct Investment (FDI). It has also approved significant number of Special Economic Zones (SEZ) for the sector. Due to policy support, cumulative Foreign Direct Investment (FDI) of US$ 3.2 billion (1.7% of total Foreign Direct Investment (FDI). inflows) has flown into the country between April 2000 to February 2010. Credit Rating Agency [ICRA] Internal Content Rating Agency has warned that power distribution companies’ overall subsidy dependence could rise in Financial Year 14 as states will likely avoid a sharp tariff hike in an election year despite increase in power purchase costs for discos. In such a scenario, discos
could face cash-flow problems and there could be issues related to compliance with the Financial Restructuring Package (FRP) if subsidy payment is delayed by state governments. According to the Internal Content Rating Agency [ICRA] estimate, state governments’ subsidy liabilities to the power sector will be at Rs 60,000 crore in Financial Year 14. While discos in states like Andhra Pradesh, Gujarat, Odisha and Uttarakhand have sought tariff hikes of 15-26% in their arrs filed for Financial Year 14, those in Haryana, Punjab, J&K and MP have not raised any such demand. "With rising subsidy dependence, the timeliness and adequacy of subsidy support remains extremely crucial for discos from their cash flow perspective," Internal Content Rating Agency [ICRA] said. It added: “the cost-reflective energy is critical, directly or indirectly, in the entire process of evolution, growth and survival of all living beings and it plays a vital role in the socio-economic development and human welfare of a country. Energy has come to be known as a strategic supply can threaten the functioning of the economy, particularly in developing economies.

Achieving energy security in this strategic sense is of fundamental importance not only economic growth but also for the human development objectives that aim at alleviation of poverty, unemployment and meeting the Millennium Development Goals (MDGs). holistic planning for achieving these objectives requires quality energy statistics that is able to address the issues related to energy demand, energy poverty and environmental effects of energy growth in 2009-10, India was the fourth largest consumer in the world of crude oil and natural gas, after the United States, China, and Russia. India's energy demand continued to rise in spite of slowing global economy. Petroleum demand in the transport sector is expected to grow rapidly in the coming years with rapid expansion of vehicle ownership. While India's domestic energy resource base is substantial, the country relies on imports for a considerable amount of its energy use, particularly for crude petroleum India faces a significant challenge in providing access to adequate, affordable and clean sources of energy, especially cooking fuel to a large section of the population, most of who live in rural areas. As per the 2011 census, almost 85% of rural households were dependent.43
On traditional biomass fuels for their cooking energy requirements national sample survey 2009-10 reveals the continued dependence on firewood in rural areas for cooking, with percentage of households depending on firewood remaining at 76.3% in 2009-10 – a drop of only 2% points since 1993-94 – even though the percentage using Liquid Petroleum Gas [LPG] has increased from about 2% to 11.5% over the same period. on the other hand, the incidence of dependence on firewood for cooking in urban areas has fallen from about 30% to 17.5% between 1993-94 and 2009-10 – a drop of more than 12% points – and the incidence of dependence on kerosene has plunged from 23.2% to 6.5% during the same period – a 72% fall, while the percentage of urban households using Liquid Petroleum Gas [LPG] has more than doubled from under 30% to 64.5%. In other words, the growth in prevalence of use of Liquid Petroleum Gas [LPG] in urban areas has been balanced by a decline in use of kerosene, in the first place, and firewood and chips, in the second. In rural areas, the rise in Liquid Petroleum Gas [LPG] use has been mainly at the expense of dung cake, followed by kerosene and ‘other’ sources. further, as per the National Sample Survey Organization[NSSO] reports (55th, 61st and 66th rounds), there has been an increase in biomass fuel use in terms of absolute quantity consumed over the past decade among rural households. this is an area of concern given.

The considerable health impacts of burning biomass fuels apart from being a hindrance to achieving developmental goals, i.e. ensuring a minimum standard of living and provisioning of basic minimum needs. Thus, a transition to cleaner forms of energy in terms of access to electricity and other modern energy forms would have implications not only on energy security, but also with respect to enabling gender equality and bring about greater development and social progress. As of march 2010, the per capita total consumption in India was estimated to be 879 KWH.
India's electricity sector is amongst the world's most active players in renewable energy utilization, especially wind energy. As of March 2010, India had an installed capacity of about 24.9 Gigawatt of new and renewable technologies-based electricity. During the eleventh five year plan, nearly 55,000 megawatt of new generation capacity was created, yet there continued to be an overall energy deficit of 8.7% and peak shortage of 9.0%. Resources currently allocated to energy supply are not sufficient for narrowing the gap between energy needs and energy availability. Energy exploration and exploitation, capacity additions, clean energy alternatives, conservation, and energy sector reforms will, therefore, be critical for energy security. Energy conservation has also emerged as one of the major issues in recent years. Conservation and efficient utilization of energy resources play a vital role in narrowing the gap between demand and supply of energy. Improving energy efficiency is one of the most desirable options for bridging the gap in the short term.\textsuperscript{44}

India has one of the largest rail networks in the world but does not have any high-speed rail lines capable of supporting speeds of 200 km/h (124 mph) or more. High-speed corridors have been proposed but not implemented.

Currently, the fastest train in India is the Bhopal Shatabdi, which has a top speed of 160 km/h (99 mph). High Speed Rail [HSR] can run at the top speed of 506 km/h (315 mph), if legacy technologies are not used. Indian railways use broad gauge for standard railway, if same gauge is used for High Speed Rail [HSR], maglev High Speed Rail [HSR] can have the operational speed of 550 km/h, with maximum speed going above 600 km/h, as broad gauge allows bigger trains, higher speeds and more stability. If adopted it will be unmatchable commercial operational speed for rail vehicles in the world faster than Japan, as Japan uses standard gauge(506 km/h), creating one of most efficient and productive economy in the world (with lowest "time cost" and other lowest indirect costs).
India has not decided on the high speed trains for self. India has also not decided on the railway technology for 21\textsuperscript{st} century and beyond. A standardization body will evaluate different options available and provide a common standard to be implemented across India. India has also need to choose between super speed trains (max 581 kmph - average 450 kmph) and high speed trains (max 300 kmph - average 200 kmph) for 21\textsuperscript{st} century and beyond. High Speed Rail [HSR] is still in drawing board without any official long term implementation plan for High Speed Rail [HSR] announced, but first railway line expected to become operational between 2030-2035.

Many countries have proposed and conducted feasibility studies on implementing High Speed Rail [HSR], but have failed to implement at the scale china has implemented it or never implemented it. India needs to have self-confidence to take bold decisions. India needs to overcome delay in taking government decisions and take decisions which are futuristic as well as ambitious.

India is currently focussing on high-speed railway track rather than high speed rail, so that Indian rails can run faster in the current tracks, with maximum speed at around 160 to 180 km/h. India may not be able to replicate the success of china, which in a span of five years, constructed the world’s largest high speed rail network.\textsuperscript{45}

\textbf{Current effort to increase speed to 160-200 km/h}

For the first time in the history of Indian railways, it aims to increase the speed of passenger trains to 160–200 km/h on dedicated conventional tracks.

The railway minister said in 2010 that a combination of prudent investment decisions in the areas of track and bridges, signalling, doubling and train-sets is proposed to be adopted to enable train running at speed of 160 km/h and above. The proposal would significantly reduce travel time for passenger trains by 20-25%. Such infrastructure would also enable railways to run shatabdi trains on long distance trunk routes and between metros, he said in his speech.
In February 2010, reported quoting Alstom, builder of France’s TGV high-speed trains, that India is at least 5–10 years away from high speed trains. India cannot just jump into the trains with average speed of above 350 kmph, before upgrading the trains to the average speeds from 80 to 120 kmph. Indian trains does not have a good track record in average speed though trains have maximum operating speed of 130-150 kmph. "(it is) extremely important to upgrade the existing infrastructure. you should move from 60 to 70 to 80 (km/hr) and 100 to 120 (km/hr) and then in some corridors (after a few years) you could imagine running bullet trains," Popular Lafarge "said in an interview to as of now increasing the maximum speed of trains to 160-200 kmph(average - 110-120 kmph) have remained part of budget speech, without any long term strategy or operational project has been announced and nothing else has been concretely done.46

One of the first proposals to introduce high-speed trains in India was mooted in the mid-1980s by then railway minister Madhavrao Scindia. A high-speed rail line between Delhi and Kanpur via Agra was proposed. An internal study found the proposal not to be viable at that time due to the high cost of construction and inability of travelling passengers to bear much higher fares than those for normal trains. The railways instead introduced Shatabdi trains which ran at 130 km/h.

The Indian ministry of railways’ white-paper “vision 2020”, submitted to Indian parliament on December 18, 2009, envisages the implementation of regional high-speed rail projects to provide services at 250–350 km/h, and planning for corridors connecting commercial, tourist and pilgrimage hubs. Six corridors have already been identified for technical studies on setting-up of high-speed rail corridors: Delhi–Chandigarh–Amritsar, Pune-Mumbai-Ahmedabad, Hyderabad-Kazipet-Dornakal-Vijayawada-Chennai, Howrah–Haldia, Chennai-Bangalore-Coimbatore-Ernakulam-Thiruvananthapuram, Delhi-Agra-Lucknow-Varanasi-Patna. These high-speed rail corridors will be built as elevated corridors in keeping with the pattern of habitation and the constraint of land.
Indian railway set up a corporation called High Speed Rail Corporation of India Ltd (HSRC) on 25 July 2010 that will exclusively deal with the proposed high-speed rail corridor projects. The corporation is a wholly owned subsidiary of Rail Vikas Nigam Ltd. (RVNL), a special purpose vehicle that carries out the construction works for Indian railways. it will handle tendering, pre-feasibility studies, awarding contracts and execution of the projects. The corporation will comprise four members, all of whom will be railway officials. All high-speed rail lines will be implemented through Public Private Partnership [PPP] mode on a Design Build Finance Operate and Transfer (DBFOT) basis. The corporation was officially formed on 29 October 2013. The called High Speed Rail Corporation of India Ltd (HSRC) will co-exist with the High-Speed Rail Authority of India (HSRA). The latter will determine the framework and the scope of works needed for India’s High-Speed Railway plans, while the former will execute these decisions.\(^{47}\)

Indian government has not taken any decision on building the high speed rail in India. India is still guarded in its view on High-Speed Railway - "India will plan such projects based on its infrastructure priorities, commercial viability and financial resources in India". But it is expected that by 2030-2035 India will have its first High-Speed Railway line ready, if not operational. The joint feasibility study for Mumbai-Ahmadabad route should be completed by July 2016, if approved it will result in financial closure, land acquisition and resulting court cases, planning, engineering and construction.

If India chooses super-speed trains(max 581 kmph - average 450 kmph)\(^{\text{http://en.wikipedia.org/wiki/High-speed_rail_in_India - cite_note:-0-4}}\) instead of high-speed trains(above 300 kmph, - average 200 kmph), maglev is only technological option available as of now for super speed. maglev trains have very low operational and maintenance, resulting in low ticket prices to the end users, with a one-time high construction cost (till import of the components stops and local manufacturing starts). Democratization of long-distance high-speed travel, as an alternative to the airlines is possible with super-speed trains. More people, more locations (stations on the way) and interior of India will have the super-speed travel, at an economical cost which is not possible with point-to-point air travel. General travel in India will change from days to hours, with maglev super-speed trains.
In India, trains in the future with top speeds of 300–350 km/h, are envisaged to run on elevated corridors, to prevent trespassing by animals and people. This is an excellent way to isolate high-speed train tracks. The Train a Grande Vitesse [TGV] tracks are completely fenced in and has no road crossing them at the same level. Wu-guang's 2-tracks line is laid, 468 km on bridges, 177 km in tunnels, and 323 km on embankments. The 336 km High-Speed Railway [HSR] tracks are 91% on bridges, flyover, or tunnels.

The current conventional lines between Amritsar-new Delhi, and Ahmedabad-Mumbai runs through suburban and rural areas, which are flat, therefore have no tunnel. Ahmedabad-Mumbai line runs near the coast therefore have more bridges, and parts of it are in backwaters or forest. The 1987 rdso/jica feasibility study found the Mumbai-Ahmedabad line as most promising. Maharashtra state government has proposed a link between Mumbai and Nagpur which will be good for development of the state railway. This project's cost is estimated ₹60,000 crore. The government also wants a corridor which will connect to Navi Mumbai international airport.

**Manufacturing base**

Bombardier India

Alstom India

India is an advantage position to take up the leadership position in manufacturing at the cost of china for next 20-30 years, because of India's demographic dividend which is available for next 20 years or so, before it turns into demographic liability. But, India has plains in interior of India where it can set up large scale manufacturing bases without causing much environmental degradation and large tract of plain land is available. India needs to build infrastructure to connect interior of India to seaports through mega infrastructure projects. High speed rail is one of such projects which can accelerate India's growth rate. India's double-digit Growth Domestic Products [GDP] growth - “investment cycle” created by the high speed rail will result in India making a major jump to the double-digit growth rate. Indian economy will be converted from social sector focused expenditure based economy with 4-5% growth rate and low value jobs to the investment based double digit growth rate economy with high-value jobs helping India to effectively use the demographic dividend for next 30 years, before it turns into a demographic liability without major pension
reforms.\textsuperscript{49}

Job generation - micro, small, medium and large scale industries will get benefited by the High Speed Rail [HSR]. a company manufacturing nut and bolts to the company working on high tech steel will all get benefited, taking India's manufacturing share to 25% of the Growth Domestic Products [GDP] it all depends on the government’s domestic content, technology transfer and competitive-bidding policies.

High Speed Rail [HSR] as a national brand - it will establish the idea of India as the most advanced country in the world, with all the prestige (and the commercial advantages) that came with that. Hi-technology research - maglev/ High Speed Rail [HSR] implementation is going to open Hi-technology research in multiple areas of science and technology. Whenever India wanted to pursue such technologies there was criticism saying India cannot afford it but, investments in space, nuclear, satellite communication, ocean technology have helped India in many different areas.

India will lose diversity - India had multiple cultures and language, as the rivers, mountains and forests had separated the people to people contact, helping local cultures to prosper. High Speed Rail [HSR] will change that as India will move to a single identity and culture, which may emerge as time passes.

Productivity improvement - one-day business travel will become norm (without six hour extra time related to the air travel - airport travel time and check in buffer, both ways). India can gain from carbon credits, "time cost" savings, increased productivity as workers can go to their home town in north India from south India in 4 hours than the current 3 days (on maglev trains). a round trip will require 8 hours from the current 6 days. Maglev are beneficial than the airports as they connect intermediate towns, which is not possible with airplanes. Maglev’s use electricity compared to airplanes, decreasing the India’s dependency on the foreign countries.
Railways will gain against the road and airlines - railways will become major mode of transport with unmatchable door-to-door travel time (with 500 km/h, - avg 450 km/h) compared to airlines, standard train and bus. As one day travel converted into one hour, it will compel people to dump bus, cab and car based group travel to High Speed Rail [HSR]. Airlines and airports will close down - High Speed Rail [HSR] in Taiwan has resulted in many small airlines and regional airports closing down, as most of the travellers shifted to the High Speed Rail [HSR]. cheapest production cost for goods - long distance travel(air and rail) will move away from petroleum based inflationary fuel to the electricity whose real cost of production is decreasing and is non-inflationary, as India is one of the biggest producer of renewable energy in the world. Emergence of ghost towns - migration may accelerate, if towns of interior India are not provided with job opportunities and facilities matching available in major towns. Forceful investments in middle part of India which has a large distance from seaports may be way to avoid it. Towns or cities which whose economy based on the bus and truck travellers resting place, they will lose business. Straw effect - south and west of India will attract best talents from across India for National Manufacturing and Investment Zones [NMIZ], Export Promotion Industrial Park (EPIPs). It parks, Information Technology Investment Region [ITIR], Special Economic Zone [SEZ], Division of Finance and Corporate Securities [DFCS] biotech park, Electronic System Design and Manufacturing [ECDM] park, Textile Park, aero park, gem and Jewellery Park, financial districts, expressways, seaports and industrial towns. Education institutes in south will make sure that people leave their home early in their teens, as seen after 1990s. Tourism and other services sectors growth - access tone and Kashmir will be hours of travel from days. Foreign and domestic tourists can cover more places in the same time, thus bringing wealth to more places. Tourism may emerge as a major source of income, if enabling environment is created. 50
Religious tourism - temples will become accessible in one hour from current one night journeys. This may have major inconvenience for the common people in free darshan which may result in two days waiting period from current one day in places like thirupathi and shiradi as there will be more special darshan devotees, as seen in the recent years after the highways have become better.

Conquering of world railways by India - investment in a sector will result in genesis of companies with unmatchable know-how and money power, which go on to acquire companies and invest in sector across the world. India's investment in airports, space, petroleum, telecommunication, renewable energy etc. have created companies, mainly in private sector which have gone international and acquired companies worldwide. Grandhi Mallikarjuna Rao [GMR] (Istanbul and mactan-cebu), Gunupati Venkata Krishna Reddy [GVK] (Bali airport), airtel (Africa), Indian oil, The Indian Space Research Organisation [ISRO], Oil and Natural Gas Corporation videsh, suzlon (5th largest in the world). India’s investment in space with missions to mars moon and largest constellation of remote sensing satellites have stimulated the manufacturing sector, with large order pipeline for outsourced satellite launch.

Poverty alleviation - India’s expenditure based poverty alleviation has been failure against the investment based growth. Highest Growth Domestic Products through job generation against the one time subsidy payouts have helped India to uplift record number of people out of poverty, year after year. As seen in Japan, High Speed Rail [HSR] lines bring along with them investment and prosperity. Railways will take centre-stage again - most of the world economies are ageing with heavy social sector expenditure with little money for investment. But, they are unable to accept that world’s high speed railways are built in china and India. Us not able to accept the fact that best railway networks are being built in other parts of the world. India jumping into High Speed Rail [HSR] bandwagon may result in rekindling of interest in railway across world. India choosing maglev for investment may result in major business for India, as conventional High Speed Rail [HSR] manufacturing is very competitive with lot of competition from France, China, Spain and Japan, where as maglev manufacturing does not have such competition.
• Manufacturing and alternative to china - India may become major manufacturing hub as interior of India with barren land can connect with seaports, which are surrounded by greenery. It is difficult to setup industries in the green-zone, but interior India has enough land to setup National Manufacturing and Investment Zones [NMIZ].

• Rail diplomacy - china has effectively used High Speed Rail [HSR] to build relationship with neighbouring countries by building deep tunnels to build the economic corridors through mountains.

• Agriculture sector growth - perishable goods can be transferred from one place to another, cutting down the wastage.

• Military might and a true cold start may be possible if broad gauge is used for High Speed Rail [HSR] - deployment of tanks and other mechanized forces transferred in hours to the borders. A repeat of 2003 may not happen again, where India lost initial momentum before international players come into picture. China has built High Speed Rail [HSR] close to Indian borders, near the chicken head in Sikkim, to deploy the mechanized forces in a few hours time from the garrisons located deep inside the country.

L&T has expertise in delivering integrated railway projects involving construction of formation, bridges, track, hoe, signalling, etc, in a comprehensive and cost effective manner. L&T represents a single source solution for varied requirements of complex and integrated railway projects. Panvel - Jnpt doubling, railway siding and yard for Hirmi cement plant, Tiruvallur-Arakkonam third line are a few recently executed projects. Similar project near Jharsuguda in Orissa for Serile Energy Limited (SEL) is under execution.  

Railway Business Unit of L&T (RBU) has bagged Rs 3751 crore (780 million USD) orders from different clients and each order is unique in terms of nature and scope of work, this indicates strength and versatility of newly formed Railway Business Unit (RBU) all projects have very stringent work completion schedule. A consortium led by L&T with Scomi Engineering Berhad, Malaysia is executing the straddle type monorail system in Mumbai. This Rs. 24.6 billion (Rs. 2460 crore) project is the country’s first monorail system being set up for the Mumbai metropolitan region development.
authority.
This is a modern urban transport system where the cars move on a single beam in an elevated corridor. The design makes it possible to execute the project on a fast-track as it requires a small foot-print and facilitates implementation with minimal demolition of structures. Other advantages include greater reliability, high manoeuvrability, lower cost and an eco-friendly design. These factors make monorails an attractive option for Mumbai where land is a scarce resource. The monorail is a quiet system with sleek exteriors, and air-conditioned cars, adding to commuter comfort.

L&T is executing an Engineering Procurement and Construction [EPC] contract for setting up of Indian railway cast steel wheel manufacturing plant in chhapara, saran district of Bihar to manufacture 100,000 cast steel railroad wheels per annum.

The scope of work for this project involves engineering, procurement and construction of complete plant including civil works, electrical installations, design, supply erection and commissioning of plant and machinery. This is the first instance of an Indian company executing a project of such complexity without any foreign collaboration. Value: Rs. 1,047 crore. (218 million USD) L&T is executing an order for development of railway siding from sterile energy limited, a prestigious Vedanta group company on Lump sum turnkey basis, for its 2400 mw power plant in jharsuguda, Orissa.

this is an engineering, procurement and construction work for a dedicated railway line of total length of 38 km involving complete design engineering (both layouts and structures), project execution, quality assurance, project management, integration and commissioning including obtaining all statutory approvals (pre/post execution) from concerned authorities. This project comprises civil, bridges, overhead electrification, general electrification, signalling and telecommunication works.

Value: Rs. 244 crore (50.0 million USD) the history of rail transport in India began in the mid-nineteenth century. The core of the pressure for building railways in India came from London. In 1848, there was not a single kilometre of railway line in India. A British engineer, Robert Maitland Brereton, was responsible for the expansion of the railways from 1857 onwards. The allahabad-jabalpur branch line of the East
Indian railway had been opened in June 1867. Brereton was responsible for linking this with the great Indian peninsula railway, resulting in a combined network of 6,400 km (4,000 mi). Hence it became possible to travel directly from Bombay to Calcutta. This route was officially opened on 7 March 1870 and it was part of the inspiration for French writer Verne’s book around the world in eighty days. At the opening ceremony, the viceroy lord mayo concluded that “it was thought desirable that, if possible, at the earliest possible moment, the whole country should be covered with a network of lines in a uniform system”.

By 1875, about £95 million were invested by British companies in India guaranteed railways. By 1880 the network had a route mileage of about 14,500 km (9,000 mi), mostly radiating inward from the three major port cities of Bombay, Madras and Calcutta. By 1895 India had started building its own locomotives and in 1896 sent engineers and locomotives to help build the Uganda railways.

In 1900, the Greater Indian Peninsula Railway [GIPR] became a government owned company. The network spread to the modern day states of Assam, Rajasthan and Andhra Pradesh and soon various autonomous kingdoms began to have their own rail systems. In 1905, an early railway board was constituted, but the powers were formally vested under lord Curzon. It served under the department of commerce and industry and had a government railway official serving as chairman, and a railway manager from England and an agent of one of the company railways as the other two members. For the first time in its history, the railways began to make a profit.

In 1907 almost all the rail companies were taken over by the government. The following year, the first electric locomotive made its appearance. With the arrival of World War I, the railways were used to meet the needs of the British outside India. With the end of the war, the railways were in a state of disrepair and collapse.

In 1920, with the network having expanded to 61,220 km (38,040 mi), a need for central management was mooted by Sir William Acworth. Based on the east India railway committee chaired by Acworth, the government took over the management of the railways and detached the finances of the railways from other governmental revenues.
The period between 1920 and 1929, was a period of economic boom; there were 41,000 mi (66,000 km) of railway lines serving the country; the railways represented a capital value of some 687 million sterling; and they carried over 620 million passengers and approximately 90 million tons of goods each year. Following the great depression, the railways suffered economically for the next eight years. The Second World War severely crippled the railways. Starting 1939, about 40% of the rolling stock including locomotives and coaches was taken to the Middle East, the railways workshops were converted to ammunitions workshops and many railway tracks were dismantled to help the allies in the war. By 1946, all rail systems had been taken over by the government. Indian railways manufactures much of its rolling stock and heavy engineering components at its six manufacturing plants, called production units, which are managed directly by the ministry. Popular rolling stock builders such as Chittaranjan Locomotive Works [CLW] and Diesel Locomotive Works [DLW] for electric and diesel locomotives; Integral Coach Factory [ICF] and Rail Coach Factory [RCF] for passenger coaches are production units of Indian railways.54

One hypothesis that emerges from the contrasting experience is that lending for infrastructure is intrinsically simpler than for policy reform in general and for the agriculture sector in particular. The difficulty with such generalizations is that the tightness. Of adherence to conditions is crucial to judging both ambition and success. A move by the bank toward an institutional-development orientation was certainly understandable, particular when the commitment of the government to substantive policy reform was neither clear nor sincere. Since the mid-1990s, the state bank of India has dramatically altered its direction to Pemphasize poverty eradication as the institution's main mission. Many programs and policies have been revised, with the objective of making the bank more effective in its support of the global fight against poverty.
Table 5.2.4. The table below shows the projects funded by the State Bank of India from 1990 to 2010 ( $millions )

<table>
<thead>
<tr>
<th>Project name</th>
<th>Commitment amount</th>
<th>Approval date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Northern corridor transport</td>
<td>485</td>
<td>2010</td>
</tr>
<tr>
<td>Energy sector &amp; power reform</td>
<td>95</td>
<td>2010</td>
</tr>
<tr>
<td>Windfarm Development</td>
<td>500</td>
<td>2007</td>
</tr>
<tr>
<td>Ashoka Buildcon</td>
<td>80</td>
<td>2005</td>
</tr>
<tr>
<td>Bokaro steel project</td>
<td>2.51</td>
<td>2004</td>
</tr>
<tr>
<td>Krishnapatnam Port Company</td>
<td>300</td>
<td>2003</td>
</tr>
<tr>
<td>Soham Renewable Energy India</td>
<td>124</td>
<td>2002</td>
</tr>
<tr>
<td>GMR Airport Holdings</td>
<td>100</td>
<td>2001</td>
</tr>
<tr>
<td>Funding the preliminary work</td>
<td>10.5</td>
<td>2000</td>
</tr>
<tr>
<td>Railway</td>
<td>10</td>
<td>1999</td>
</tr>
<tr>
<td>through major, medium and minor irrigation works</td>
<td>16</td>
<td>1998</td>
</tr>
<tr>
<td>Quadrilateral and selected National Highways</td>
<td>64</td>
<td>1997</td>
</tr>
<tr>
<td>roads sector</td>
<td>11.5</td>
<td>1996</td>
</tr>
<tr>
<td>Telecommunication</td>
<td>100</td>
<td>1995</td>
</tr>
<tr>
<td>Telecommunication</td>
<td>1100</td>
<td>2013</td>
</tr>
<tr>
<td>Air India</td>
<td>1500</td>
<td>2013</td>
</tr>
<tr>
<td><strong>SBI’s exposure to Kingfisher Airlines</strong></td>
<td>1475</td>
<td>2012</td>
</tr>
<tr>
<td>Petrolium</td>
<td>30</td>
<td>2004</td>
</tr>
<tr>
<td>Thermal</td>
<td>20</td>
<td>2002</td>
</tr>
<tr>
<td>Highway</td>
<td>10</td>
<td>2000</td>
</tr>
<tr>
<td>Petrolium</td>
<td>12</td>
<td>1992</td>
</tr>
<tr>
<td>Highway</td>
<td>4</td>
<td>1990</td>
</tr>
</tbody>
</table>

(source, SBI and RBI annual report various issues)
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