# ISSUES, CHALLENGES AND OPPORTUNITIES OF INFRASTRUCTURE DEVELOPMENT IN INDIA

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***Abstract***
*India is a growing economy. It is estimated to be the third largest economy by 2050. Because of the GDP growth and more emphasis on infrastructure growth, from roadways to airways, ports to airports and power production facilities, Indian infrastructure segment is vital for the development of the nation and hence enjoys intense attention from top-grade policy makers of the country. Infrastructure growth is a stepping stone of a stable and productive society; it presents unique challenges but also brings opportunities for private and public sectors in the field of construction. Development will lead to massive construction and there will be a positive growth in industries related to construction. Reports also suggest that the upward trend has been witnessed by these sectors. The paper analyses the recent scenario of infrastructure investment in India, with the recognition that inadequate infrastructure is one of the major constraints on India's ability to sustain high GDP growth. It conducts an overview of the trends in infrastructure investment from the 10th Five Year Plan onwards, and tries to examine the linkage between infrastructure and economic growth. The results exhibit a very high rate of return and also highlight that, since resource constraints will continue to limit public investment in infrastructure in other areas, Public Private Partnership (PPP) project-based development needs to be encouraged wherever feasible.*

***Key Words: Infrastructure, Economic Growth, Public Private Partnership, Issues, GDP, Sustainability***.

## Introduction

Infrastructure, by definition the public stock of social and economic overhead capital because of its huge potential for improving the quality of life and its large scale impact on the aggregate economy, has been mentioned quite often in the early works of development economists such as Rosenstein-Rodan (1943), Lewis (1955), Hirschman (1958), Myrdal (1958), Hansen (1965), and others. However the nineties saw unprecedented efforts at both academic and government levels to create awareness about increased infrastructure investment (Ghosh and De, 2005). The Conference held in June 1990 by the Federal Reserve Bank of Boston was perhaps the first of its kind in which all participants agreed that public capital investment plays an important role in enhancing both the quality of life and private economic activity. The works of Aschauer (1990), Munnell (1990), Gramlich (1990) and others on issues relating to the importance of infrastructure, its role in regional economic performance, the role of public infrastructure and its provisioning, etc., had been comprehensively dealt with by eminent academicians, researchers, and other stakeholders.

The total investment in infrastructure is estimated to have shot past the 500 billion dollar mark during the eleventh plan period. In the twelfth plan period which begins this year, the government plans to redouble its infrastructure initiative and aims to increase investment in the sector to one trillion dollars, about half of which is envisaged to be from the private sector. Numbers apart, the ground reality for the sector remains grim with the infrastructure deficit in the country actually widening over the last few years. Plagued by funding and implementation constraints, core sector development has not kept pace with economic growth.

A well known and co-ordinated system of transport plays an important role in the sustained economic growth of a country. The present transport system of India comprises several modes of transport including rail, road, coastal shipping, air transport, etc. Transportation in India has recorded a substantial growth over the years both in spread of network and in output of the system. The Ministry of Shipping, Road Transport and Highways is responsible for the formation and implementation of policies and programmes for the development of various modes of transport save the railways. Easy accessibility, flexibility of operation, door to door service and reliability have earned transport an increasingly higher share of both passenger and freight.

- This Decade (2011 to 2020) will be of Infrastructure Development in India.
- Government is committed to in spending more than 1.0 Trillion U.S.Dollars in 12th Five Year Plan.
- This 'Never in history' target is necessary to maintain 9% GDP Growth rate for next decade.
- Major spending will be focused on
    - Power generation and Transmission
    - Roads and Highways
    - Oil and Gas
    - Urban Infrastructure
    - Water Resources
    - Telecom
    - Airports and Seaports

**Issus**

Fallbacks of the regulatory framework naturally extend to the implementation of infrastructure projects. These lead to time and cost overruns, and delay in financial closure of projects. Time is lost both before the actual physical commencement of the project work and in the course of execution. In terms of cost to the economy, delays in implementing power projects are arguably the most serious. Taking possession of land for large projects (and thermal power projects in particular require extensive land area) is both contentious and tim consuming. Land and environment-related issues often lead to delays caused by legal procedures initiated by various stakeholders.

Among the infrastructure sectors, railway projects account for among the highest cost overruns (169 per cent escalation) caused by dragged-out projects. Much of this occurs because of a factor not discussed above: the deliberate commencement of work on a far greater number of projects than the organisation's financial capacity for execution.

To analyze three interrelated issues - infrastructure investment, growth, and poverty - in the context of India, albeit some recent studies have also tried to address them in a different context (Ghoshand De, 1998, 2000; Lall, 1999; Thorat and Fan, 2007; Sahoo and Dash, 2009). The most important thing to mention at this juncture is that most of these studies have taken into account physical measures of infrastructure for analysis purposes, but the major limitation of this approach is that there is no simple way to aggregate the various measures of infrastructure. A further obvious shortcoming of physical measures is that they fail to capture the quality of the infrastructure, which may vary systematically across countries or regions. In some cases the efficiency of the use of existing infrastructure varies substantially across regions. As such, a straight comparison between two regions may be misleading without additional information. Thus, the major point of departure of this paper is that it tries to address these issues with the recent availability of estimates of investment in infrastructure over a period of ten years.

Shortage in trained manpower in vocational skills has been highlighted in more than one context. The situation is true even in the case of infrastructure projects. The process of enlarging the facilities for Infrastructure Challenges in India

Vocational training across the country has to become more effective to meet the manpower needs of the growing economy. The requirement is not merely for large numbers but for large numbers who are imparted with quality skills.

These issues have no easy solutions. Transparency in procedures like contract awarding and setting of time limits for completing legal processes are among the obvious remedies. Imparting improved project management skills and techniques within the implementing agencies is another area that can fetch results in the short term. Removal

of weaknesses in the long-standing law and setting up additional manufacturing capacity will require more time. However, introducing greater competition, including imports, requires as much attention.

**Recent Challenges and Prospects**

While the importance of infrastructure on economic development is well documented across countries/regions, as is being experienced in India, the Government of India recognizes that there is a significant deficit in the availability of physical infrastructure across different sectors and that this is hindering economic development (Government of India, 2009). Sectors like telecommunications and airports are being transformed, while sectors like the highway system are being upgraded and expanded. Nevertheless, inefficient electricity distribution, not-so-transparent coal production, and the tardy pace of land acquisitions are still major hindrances to reaping benefits from infrastructure.

The Planning Commission of India, in its midterm review of the 11th Five-Year Plan, noted that India had a large deficit in infrastructure investment (Government of India, 2011). As mentioned earlier, infrastructure investment needs to be close to 10% of GDP on a sustained basis for the next five years, 2012-2017. This massive investment targets (a whopping $1 trillion) for developing the physical infrastructure, though not impossible, will nevertheless be tough to achieve through government budgetary support, and therefore needs private participation in financing. It may be recalled that private investment constituted around 30% of total infrastructure investment and was nearly 2.3% of GDP between 2007-2008 and 2011-2012. Private infrastructure financing in India, as in most other countries, faces a number of challenges. Private financing of infrastructure projects is not so lucrative, as these projects are complex capital intensive, long-gestation projects that involve multiple risks, and investors have to be prepared for a long period of debt repayment and return on equity. Many financial institutions are limited in their ability to invest in very long-term illiquid assets (World Bank, 2006; IDFC, 2009).

Three sectors are very demanding due to various reasons. Major risks arise due following challenges.

**Challenge No. 1: Oil and Gas**

- India has growing need for Mineral Fuels i.e. Oil and Gas consumption demand.
- We are presently 75% Import dependent. This dependence will get worst upto 85% by the end of decade.
- Hence our economy is venerable to International oil prices which are steadily rising due to Global Supply situation.
- We need to reverse this trend by some major Policy and Investment decisions.
    - Increase domestic exploration by inviting foreign companies with latest exploration technologies.
    - Invest in International Oil fields to get long term assured supply.
    - Curtail consumption and promote fuel efficiency, by realistic pricing with minimum subsidies.
    - Enhance use of domestically available natural gas which is low on Pollution problem.

**Challenge No. 2: Power**

- India has growing need of power in tune with 9% GDP growth rates.
- India has installed 1, 67,000 M.W. capacity in last 60 years.
- In last ten years we have been adding only 6000 to 9000 MW every year.
- But in last decade, our power deficit has gone up by 10% on an average demand and upto 15% on Peak load demand.
- Further regional imbalance on power availability has hit even 18 to 25%.
- We now need to add 18000 to 20000 M.W. every year, to more than double our capacity within this decade.

- Substantial power generation at present is based on upto 63% by thermal power and upto 23% by Hydro electric generation. Share of Renewable Sources of Energy though growing is limited to 10%.
- Share of Nuclear power is only 3% at present, though slated grow in coming decade upto 10% if everything goes well.
- Potential to expand Thermal Power will be constrained by Domestic availability of coal and our ability to import coal.
- Potential to expand Hydro – electric Power, though available in Himalayan states, is constrained by environmental concern for larger projects, and high per MW cost issues for smaller projects.
- Nuclear Energy can be the future, if we can sort out issues of Technology, Nuclear fuel and fears of Nuclear radiation accidents.

**Challenge 3 : Urban Infrastructure**

- India is presently 28% Urban and 72% rural but this is set to change dramatically.
- India will be 40% Urban and 60% rural in next 20 years.
- But some states like Tamilnadu, Maharashtra Gujarat, Karnataka and Punjab, which are already 40 to 50% Urban will become 52 to 67% Urban in next twenty years.
- In short Urban population of 35 crore today will be 60 crore in next 20 years with 68 cities with more than 40 lakh population.
- There will be 9 cities with more than 1 crore population by 2030 including pune which is only 45 lakh at present.
- Urban areas of future will have 40 to 60 urban poor who have migrated from rural areas in search of Job and Livelihood.
- India's rural areas which supports 70% population contributes only 22 to 25% of GDP, by way agriculture and related income, which is unsustainable situation for such a large population.
- We have to give up our utopia about self-sufficient villages, or rural economy and accept the flood of rural jobless coming to cities as urban poor.
- Our future GDP growth will come from Urban areas with major share of 70% or more created by Services and Manufacturing.
- We must allow cities to survive and let them grow or even prosper, by suitable changes in income generation and distribution policies apart from fund raising strategy which can make them self sufficient and livable in coming decade.

**Public-Private Partnerships In India**

In the last decade, the government has been faced with a huge resource crunch. The combined deficit of the Central and state governments is roughly 10 percent of the GDP. Government borrowing has been capped through the Fiscal Responsibility and Budgetary Management Act. This necessarily limits state participation in infrastructure financing, thus opening the door to innovative approaches such as PPPs the Government of India has been encouraging private sector investment and participation in all infrastructure sectors. As the National Development Council has made clear, 'increased private participation has now become a necessity to mobilize the resources needed for infrastructure expansion and upgrading.' The PPP model has been fairly successful in many advanced countries and it is a robust model. PPPs in India are in a nascent stage but are gaining popularity and support given the horrible need to improve infrastructure in the country. A review of international best practice in PPPs suggests a number of core issues that public authorities must address when considering use of PPPs for procuring public infrastructure projects. These include:

- Whether PPP arrangements will result in better value for money than conventional procurement methods;
- Whether the project is affordable in the long term, given overall budgetary constraints;
- How willing is the private sector to be involved in the provision of public services; and
- What type of PPP arrangement is most appropriate for a particular project?

In recent years, the PPP model in India has been fairly successful with several projects being implemented across sectors. However, one of the main problems confronting infrastructure and PPPs in India is the delay in implementing and executing large-scale projects resulting in time and cost overruns. Efficiency in implementing infrastructure projects in India is a rarity. The PPP model is complex, leading to problems at various stages of implementation and execution of the project. Undoubtedly, PPPs in India have gathered significant traction in recent years but it is said that India lacks the overall sophistication of the market in terms of innovative and diverse application of PPPs. According to a2011 survey by the Royal Institution of Chartered Surveyors, over 240 projects with a value of $14.5 billion have been delivered over the last 15 years which show that this model has been operational in India, with the majority $9.4 billion having been delivered during 2005–10 alone. Over the years, the adoption of standardized documents, such as model concession agreements and bidding documents for award of PPP projects, has been streamlined, and decision-making by gencies has also been accelerated in a fair, transparent, and competitive manner. This approach has contributed significantly to the recent strides in rolling out a large number of PPPs in different sectors. According to the Private Participation in Infrastructure database of the World Bank (India), with 1,017 PPPs accounting for an investment of Rs. 486,603 crores, India is second only to China in terms of the number of PPPs; in terms of investment, it is second to Brazil. PPPs in India are dominated by the transport sector both by the number of projects and investment, mainly due to the large number of road sector projects. Further, efforts are needed to mainstream PPPs in several areas, such as power transmission and distribution, water supply and sewerage, and railways, where there are significant resource shortfalls and also a need for efficient delivery of services. Similar efforts will also have to be initiated in social sectors. The government has been emphasising the need to explore the scope of PPPs in the development of social sectors like health and education.

Some of the major PPPs undertaken so far are:

- Delhi, Mumbai, Hyderabad and Bengaluru airports.
- Ultra-mega power projects at Sasan (Madhya Pradesh), Mudra (Gujarat), Krishnapatnam (Andhra Pradesh), and Tilaiya (Jharkhand).
- Container terminals at Mumbai, Chennai, and Tuticorin ports.
- 15 concessions for operations of container trains.
- Jhajjar power transmission project in Haryana.
- 298 national and state highway projects.

India's overall infrastructure investment is pegged at $1 trillion in the Twelfth Five Year Plan of which approximately 40 per cent is expected from the private sector. While this ensures tremendous potential opportunities for private sector investment, it is imperative that both the government and the private sector address the issues of achieving efficiency in areas such as the tendering process, execution of projects on time and within budgets, and streamlining structural financing problems.

**Approach to PPPs in India**

PPPs are still a relatively new phenomenon in India and are in a nascent stage compared to the advanced models of PPPs in other countries. Until 2004, there were only 85 PPPs, but between 2004 and 2005, this figure leapt to 500, and in 2011 the number of PPPs in the country had increased to 840 as per the PPP database of the Government of India. PPPs worth billions are under development across the country, with the largest number of projects in the road and bridges sector, followed by ports. These sectors dominate PPP initiatives. The leading state users of PPPs by number of projects are Madhya Pradesh and Maharashtra, followed by Gujarat, Tamil Nadu, and Karnataka. Almost all contracts have been of the BOT (Build–Operate–Transfer)/BOOT (Build–Own–Operate– Transfer) type or a close variant, which involves user payments. Table 1 & 2 shows that the largest number of PPPs in India have been in the road sector, followed by ports, urban development and energy sectors. The Economic Survey (2008 09) noted six key hurdles faced by PPPs: policy and regulatory gaps; inadequate availability of long-term finance; inadequate capacity in public institutions and public officials to manage PPP

processes; inadequate capacity in the private sector—both developer/investor and technical manpower; inadequate shelf of bankable infrastructure projects that can be bid out to the private sector; and inadequate advocacy to create greater acceptance of PPPs by stakeholders. Undoubtedly, India has to proceed with caution with respect to PPPs, ensuring the necessary checks and balances.

**Table 1**
**PPP Projects in Central and State Sectors in India**

| Central | No. of. projects | Project cost (Rs.Cr.) |
|---|---|---|
| Major ports | **21** | **14,735** |
| Airports | **5** | **19,111** |
| Roads | **172** | **96,152** |
| Railways | **7** | **2,418** |
| Energy | **4** | **17,500** |
| **Total** | **209** | **149,916** |
| **State sector** | | |
| Roads | **273** | **123,386** |
| Ports | **41** | **66,479** |
| Airports | **-** | **-** |
| Railways | **2** | **1,494** |
| Urban infrastructure | **166** | **84,914** |
| Energy | **65** | **56,185** |
| Tourism | **50** | **4,497** |
| Other sectors | **34** | **3,756** |
| **Total** | **631** | **340,711** |
| **Grand Total** | **840** | **490,627** |

*Source: Planning Commission and Infrastructure.gov.in*

**Table 2**
**PPP Projects in India**

| Sector | Number |
|---|---|
| Airport | **5** |
| Education | **19** |
| Health Care | **8** |
| Energy | **72** |
| Ports | **62** |
| Roads | **445** |
| Railways | **9** |
| Tourism | **53** |
| Urban Development | **167** |
| **Total Projects** | **840** |

*Source: Planning Commission and Infrastructure.gov.in*

In this context, and in view of ensuring project sustainability over the long term, the suggestion for independent regulatory bodies in core infrastructure sectors, such as the transport sector is a welcome suggestion for future reforms. Measures also need to be taken to make existing regulatory agencies in the power sector more effective.

To make PPPs a success, state governments need to establish full-fledged PPP departments mandated with developing core competencies, policy frameworks, and public discourse. Lessons and experiences of other emerging markets in this context would also be helpful. Rigorous assessment of the costs and benefits of large projects would also be critical for achieving broader public support for the projects.

Haryana serves as a suitable example of the same. As a state government, they have their own clear PPP policy and action. They have attracted significant investment and have PPP policies well established. This has significantly contributed to the fact that Haryana has risen amongst the Indian states at an astonishing pace. It is currently the third ranked state as per GDP indicators.

**Concluding Observations**

Lack of proper infrastructure pulls down India's GDP growth by1-2 percent every year. Physical infrastructure has a direct impact on the growth and overall development of an economy. While strategies to accelerate economic growth did anticipate the need for faster development of infrastructure as well, the fast growth of the Indian economy in recent years has placed increasing stress on physical infrastructure. The basic conclusion that emerges from the paper is that infrastructure has a huge impact on national and local development. That it exhibits a very high rate of return even compared to other investment. Sectors such as electricity, railways, roads, ports, airports, irrigation, and urban and rural water supply and sanitation, continue to experience the pressure of rising demand for services even as they suffer from a substantial initial deficit. The public sector is expected to continue to play an important role in building transport infrastructure. However, the resources needed are much larger than the public sector can provide and public investment will therefore have to be supplemented by private sector investments, in PPP. Infrastructure in seven broad sectors, namely, road construction, railways, electricity gas and water supply, communications, irrigation, storage, and ports are complementary in nature and mutually reinforcing several reform measures that have been taken to attract private investment in infrastructure through the PPP route have met with considerable success at both Central Government and State levels.

**References**

1. Kohli, H. (2012): Infrastructure Development in Asia and Pacific: Toward A New Public-Private Partnership, World Bank, Washington DC.
2. Chetan Vaidya and Hitesh Vaidya (2008), Creative Financing of Urban Infrastructure in India through Market-based Financing and Public- Private Partnership Options.
3. Competition Issues in Regulated Industries: Case of Indian Transport Sector (TERI 2009).
4. Economic Survey of India 2011-12.
5. FICCI Ernst & Young Report–Accelerating Public Private Partnerships in India 2012
6. Lessons from PPPs of Indian Railways and Way Forward-G. Raghuram and Rachna Gangwar 2010.
7. Planning Commission, Government of India, Eleventh Five Year Plan.(2007-12), rural development, industry, services, and physical infrastructure, Volume III.
8. Planning Commission, Government of India, Faster, Sustainable and More Inclusive Growth, An approach paper to the Twelfth Five Year Plan.
9. Key Features of Budget 2012-2013, http://indiabudget.nic.in.
10. Orf Occasional paper 2014, http://www.orfonline.org.