



Vivekananda International Foundation

Development of Infrastructure in India – The Vehicle for Developing Indian Economy

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Issue Brief

Foreword



For a high potential and developing nation, no challenge, apart from sovereignty issues, is more significant than the obligation of creation of nation-wide infrastructure. This is so because social and economic progress need solid platforms to take off – and to sustain the march to nation building.

The challenge of infrastructure development is not confined to conceptualisation, planning, engineering skills and societal practices. For an exchequer that is pulled in many directions, the challenge is further accentuated in the complexities of fiscal management.

The Indian State has ever been committed to the cause of infrastructural development, though there is much scope left for synergic, multi-sectoral and proportionate progress. The past few years have seen this lacunae being brought under control by the institution of a plethora of innovative measures. Obviously, adoption of fresh approach and alacrity in uplift of the nation is apparent.

This paper presents an interesting kaleidoscope of all round trends in India's infrastructural development and the salience of these in the overall scheme of national progress. More interestingly, it depicts a comprehensive picture for clearer understanding and offers useful insight for students as well as analysts.

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About The Author

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Abstract

Infrastructure is a country's bedrock of economic, social and human development. It is also inextricably linked with the country's overall security at the borders. The network of roads and transport, ease of movement and communications, energy and water security, cyber security for guarding against data attacks, etc., all are integral for a country's overall security architecture. Globally, infrastructure is the key differentiator for a country's investment attractiveness, productivity, sustained and rapid growth, levels of poverty, human indices, capacity to deal with emergencies or disasters, resilience and confidence. In this article we attempt to gauge India's Infrastructure quotient in various spheres and recent initiatives.

Introduction

Infrastructure is a *sine-qua-non* for the development of economy. It is the key to the efficiency of investment, manufacturing competitiveness, exports, employment, urban and rural development, quality of life etc. Development of infrastructure at the borders, connectivity with hilly and remote areas and transport linkages are also critical for national security.

What really is Infrastructure? The word infrastructure has been used in French since 1875¹ and in English since 1887 and originally meant as "*the installations that form the basis for any operation or system*". It is needed to ensure that country's operations continue to move and systems continue to function. In fact, the pace at which economies move and function is directly proportional to the quality of Infrastructure in place. The most common connotation relates to "*core*" or *Economic infrastructure* - roads, railways, ports, civil aviation, electricity, and telecommunications; and *Social Infrastructure* - health (hospitals, dispensaries etc.), education (schools, colleges etc.) and housing. In the urban context, *Urban Infrastructure* additionally includes drainage, piped water supplies, sanitation, sewerage, solid waste collection and disposal, piped gas etc. In the rural context, *Rural infrastructure* also refers to rural roads, irrigation networks, tanks and ponds, flood control works; market yards (*mandis*) etc. Under a cross-sector program, the 'Swacch Bharat Abhiyan', the Government has launched an ambitious initiative to clean and modernize the urban and rural landscape of the country to eradicate open defecation by 2019.

Infrastructure is also sometimes categorized as *hard infrastructure* (as described above) and *soft infrastructure* which refers to the architecture of policies and regulations (like software) to enable the system to perform well. Like hard infrastructure, soft infrastructure is also crucial for speedy growth. Infrastructure has a strong multiplier effect on economic growth. As per the Standard & Poor's Global credit

¹ Word Origin and History for infrastructure (http://www.dictionary.com/browse/infrastructure&https://en.wikipedia.org/wiki/History_of_infrastructure)

Report on India, “Investment in infrastructure equal to 1 percent of GDP will result in GDP growth of at least 2 percent as infrastructure has a ‘Multiplier effect’ across sectors”. In the context of India, Ernst & Young (E&Y) in its report titled “Infrastructure 2013” observed infrastructure bottlenecks prune GDP by at least 2% annually². Many of the matrices of processes and regulatory requirements in the soft infrastructure are also covered in the Ease of Doing Business of the World Bank ranking³, where India still ranks low (at present 130 out of 184). Infrastructure also has a strong connect with Risk mitigation, managing natural disasters, resilience and quick recovery. Countries with poor infrastructure are more vulnerable in such situations. In yet another context, as per United Nation Reports, countries with poor infrastructure are less likely to achieve poverty reduction and Millennium Development Goals (MDGs) set by UN.

Regulatory Reforms

Let us first look at soft infrastructure. Regulatory cholesterol often inhibits investment and development process. The present Government has taken a series of bold regulatory reforms to improve India’s global ranking. Various States have also been competing with one another to attract and facilitate investment. The results are very encouraging, as also recognized by the World Bank, and substantial upgrading in ranking is expected this year. While addressing Eighth Vibrant Gujarat Global Investor Summit in Gandhinagar in January 2017, Prime Minister Modi announced that “The Government wants to make India one of the easiest places in the world to do business in, making it irresistibly attractive to investors”. That investors globally have enthusiastically responded is evident from the rapid rise of Foreign direct investment (FDI) inflows since 2014 (Chart 1). Cumulative FDI inflows since FY 2015 have gone up to INR 8,736 (US\$130) billion.

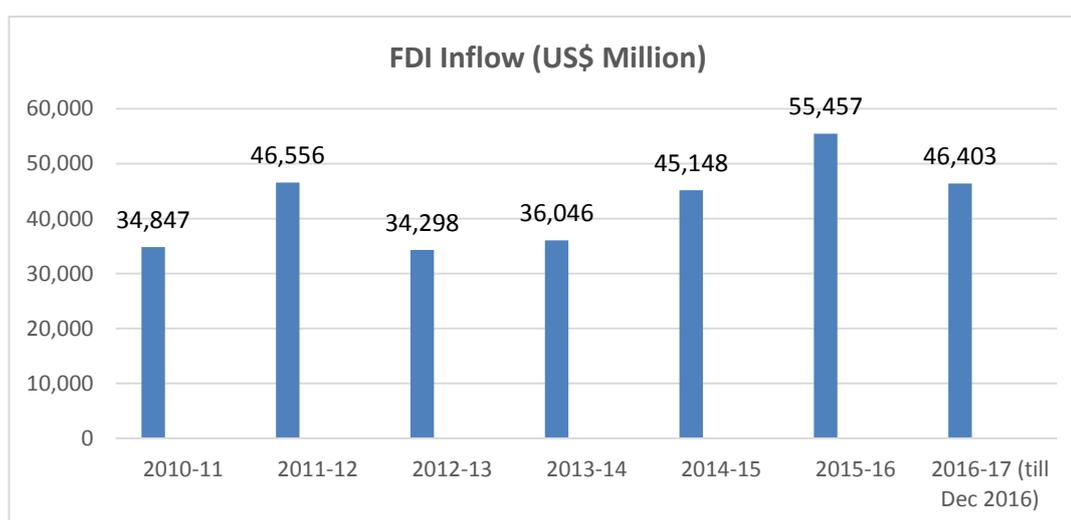


Chart 1 - FDI Inflows in India (Source: DIPP)

² “Infrastructure 2013” at [http://www.ey.com/Publication/vwLUAssets/Infrastructure_2013/\\$FILE/Infrastructure_2013.pdf](http://www.ey.com/Publication/vwLUAssets/Infrastructure_2013/$FILE/Infrastructure_2013.pdf).

³ “Ease of Doing Business” at <http://www.doingbusiness.org/rankings>.

The potential and opportunity today is, however, historic. All international institutions, World Bank, IMF, and World Economic Forum etc. recognize it as India's moment now, widely acclaiming India as the engine of world economic growth. India's economy has already overtaken its former colonial master UK, becoming fifth largest GDP after USA, China, Japan and Germany. In terms of purchasing power parity, it ranks even higher, at fourth, ahead of Japan.

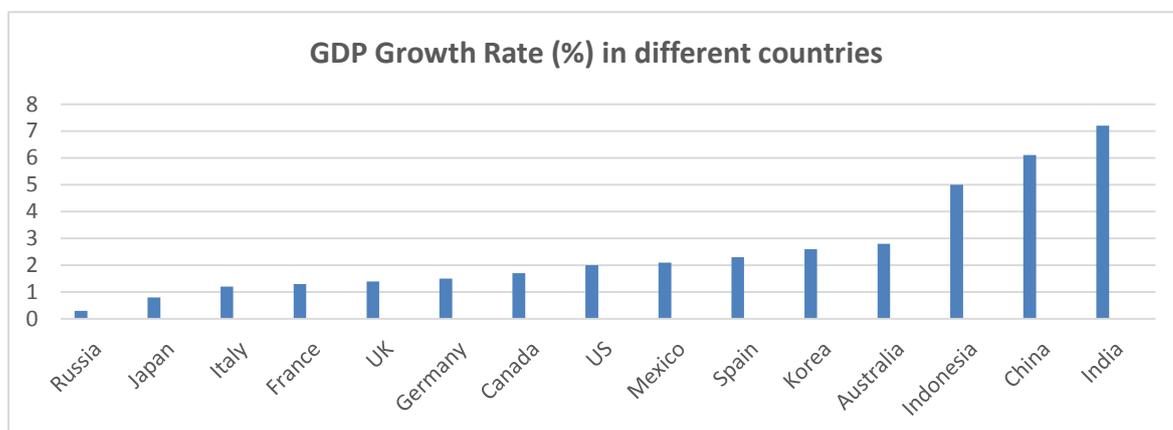


Chart 2 – GDP Growth Rate of Major Economies (Source: Moody's)

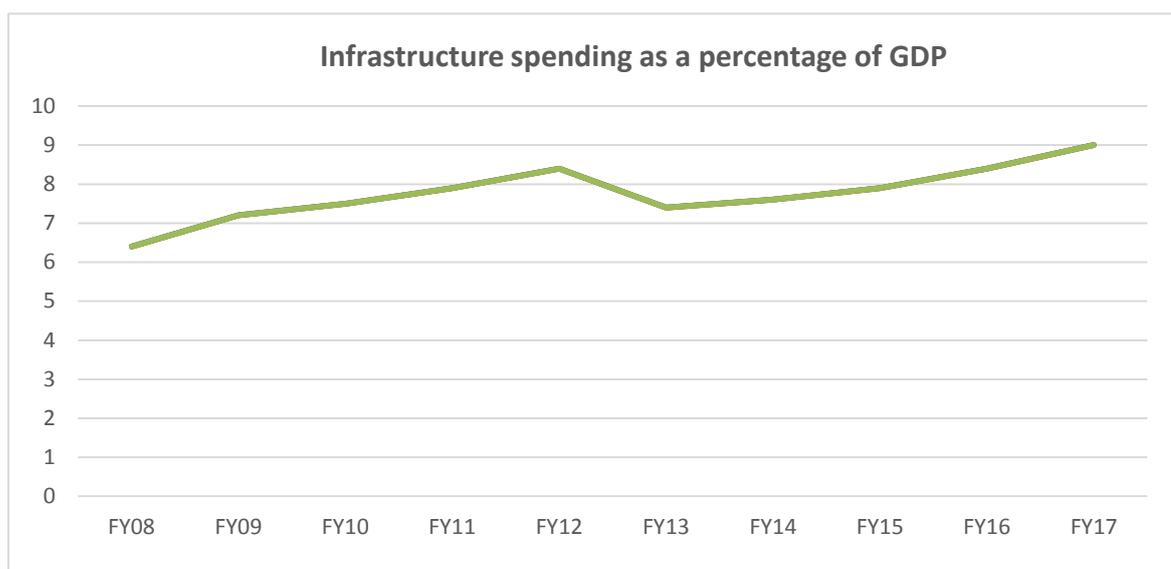


Chart 3 - Infrastructure Spending as a % of GDP (Source: IBEF)

However, Global Infrastructure Investment Index 2016 ranked India at the 23rd spot. To accelerate the pace of economic growth and race to the top, the most critical need today is to expand and modernize our inadequate and strained infrastructure, and speedily bring it to the world standards. The Government has been increasing the share of infrastructure spending every year (Chart 3), but the needs are humongous, over a trillion dollars during the next 5-7 years. Fortunately, Infrastructure has now received a big thrust in our 2017 budget, which has been acclaimed by most economists and commentators as historic and game-changer.

While presenting it in the Parliament, Finance Minister Arun Jaitley announced, “*My overall approach, while preparing this Budget, has been to spend more in rural areas, infrastructure and poverty alleviation...*”. The total allocation for infrastructure has been raised to an unprecedented INR 3.96 lakh crore (USD 59 billion) in 2017, as against INR 2.21 lakh crore in 2016-17. On transport, the outlay now is INR 2.41 lakh crore as against INR 2.18 lakh crore in 2016-17. For the railways, INR1 lakh crore have been provided for enhanced safety. This would involve improved tracks, better rolling stock, better signaling, lesser level crossings and world class maintenance of tracks. It is targeted to provide electricity in cent percent villages by May 2018. Two more strategic crude oil reserves will be built soon - at Chandikhole in Orissa and Bikaner in Rajasthan – taking country’s strategic reserve capacity to 15 million metric tons, enough to maintain oil supply for 90 days in case of a disruption. Airport infrastructure will be expanded and upgraded and airlines will get tax incentives for small towns. A new Metro Rail Policy will be announced soon with focus on innovative models of financing and implementation. Infrastructure status is being provided for Affordable Housing, targeting housing for all by 2022.

Let us look at a few of these core elements of economic infrastructure in some detail.

Roads

Road network is traditionally the backbone of Indian transport infrastructure. About 65 percent of all goods and 86 percent of total passenger traffic use road network in the country. The poor maintenance and congestion on roads contribute to substantial reduction of vehicular speeds, cause avoidable delays and inefficiencies in economy and trade. In road accidents, many of which are fatal, India unfortunately is at the top of the World. There is an urgent need to upgrade and modernize our road network, improve geometrics and maintenance, build world class expressways, highways, bridges, flyovers, footbridges and underpasses. A country-wide efficient road network is also essential for trade flows and achieving the vision of a Single National Market in India, so essential for the country’s trade and economic integration.

National Highways

National Highways constitute only 1.9 percent of the total road network in India but carry 40 percent of the total road traffic. The Government has accordingly given a special thrust on the expansion and modernization of highways. Budget allocation for highways has been increased from INR 57,976 crore in 2016-17 to INR 64,900 crore in 2017-18 and 2,000 km of coastal connectivity roads have also been identified for construction and development. Length of national highways in India has gone up from 97000 km in FY-15 to 100,500 km in FY-16. With process reforms, the pace has now increased substantially and the Government plans to double the length of National Highways soon.

According to the former Prime Minister Shri Atal Bihari Vajpayee, “*Infrastructure development is the very back bone of any strategy aimed at achieving higher growth and large-scale employment generation*”. The historic National Highway Development Program (NHDP) launched in 2000 by the Vajpayee Government seeks to connect the

four corners of the nation, through the Golden Quadrilateral and North-South East-West Corridor to provide the main arteries of transport communication. It has made great progress since then, and five more phases for connectivity and further linkages have been added to the program. These are NHDP III (upgradation, 4 to 6-laning), NHDP IV (2-laning with paved shoulders), NHDP V (6-laning of GQ at high density corridors), NHDP VI (Expressways), NHDP VII (Ring roads, by-passes and flyovers). The present status of these seven phases of NHDP is illustrated below (Chart 4).

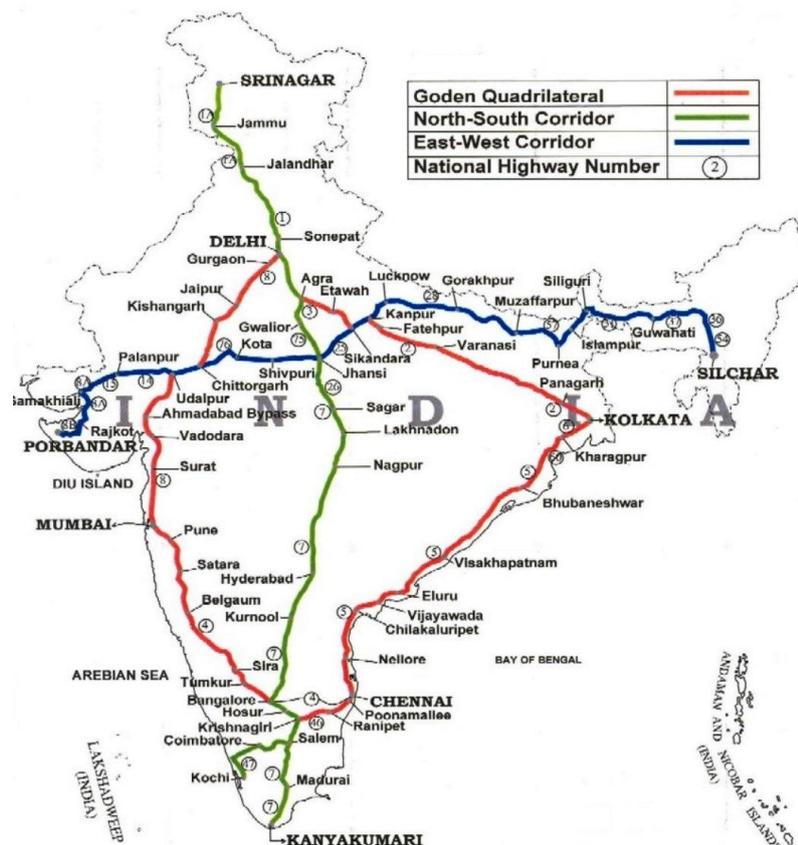


Figure 1 – Golden Quadrilateral and North-South Corridor

Special Program in North-East

In addition to the various phases under NHDP, a special thrust has been accorded to the development of roads in the North-East region. The Special Accelerated Road Development Program for the North-East Region (SARDP-NE), is designed at developing road connectivity between remote areas in the North-East and state capitals and all district headquarters, through construction of double/four lane highways (about 7,530 kilometers) and double-laning (about 2,611 kilometers) of state roads. The Government has now established a separate agency, National Highway Infrastructure Development Corporation Limited (NHIDCL), which is mandated to develop 10,000 km of roads in the country with a special focus on North-East and border areas, and is impressively fast-tracking these projects.

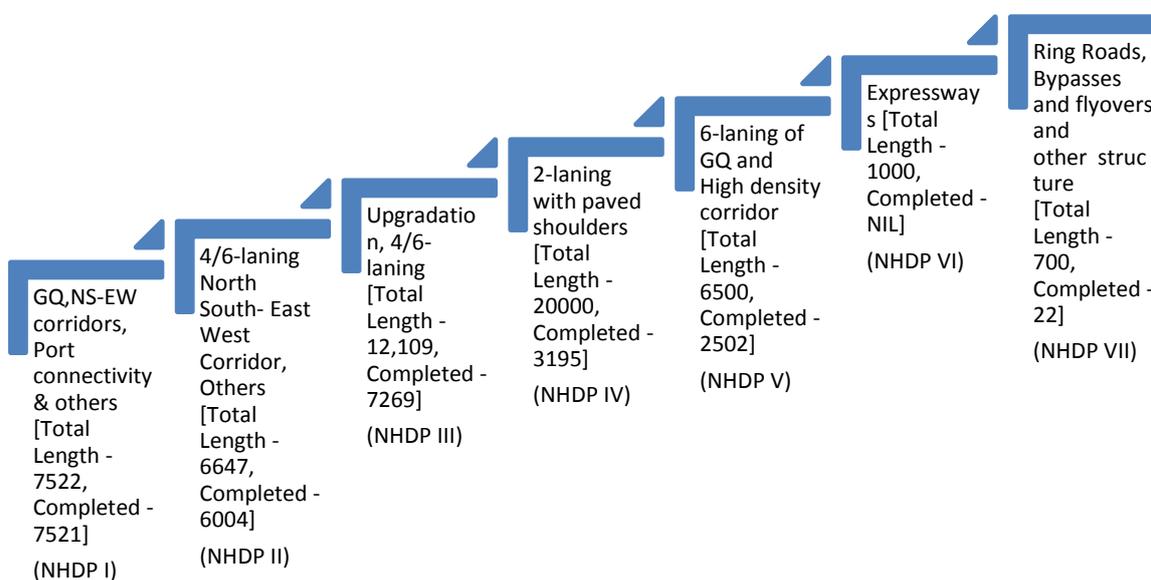


Chart 4 - Overall status of NHDP as of 31st Dec, 2016

'Bharatmala' Project

This is an ambitious road and highways development program (Figure 2). It is an umbrella scheme under the Ministry, integrating many other schemes, projects and programs. Under Bharatmala Project, 25000 km of roads (and also bridges) will be constructed, at an estimated cost of INR 14000 crore, with a target completion in 2022.

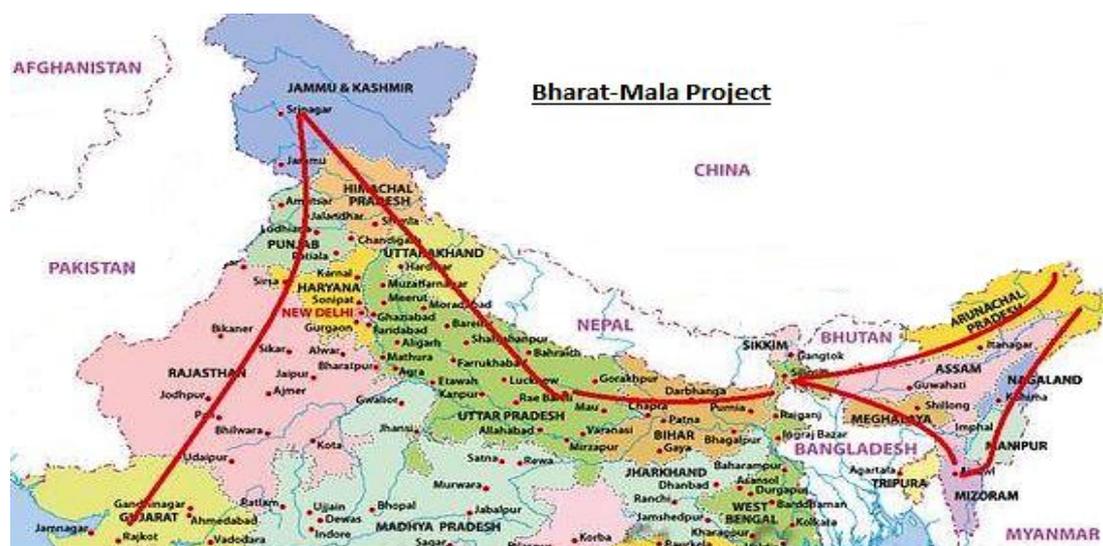


Figure 2 - Bharatmala Project⁴

⁴ <http://www.shiveshpratap.com/bharatmala-project-explained-map/>.

There are four components of Bharatmala scheme:

- I. Development of about 7000 km State roads along coastal area, border area, with special focus on connectivity of non-major ports.
- II. Development of roads for Backward Areas, Religious and Tourist Places Connectivity Programme.
- III. 'Setubharatam Pariyojana' is aimed at elimination of the Railways crossing in India by constructing 1500 major bridges and 200 Railway over Bridges (RoBs) or Railway under Bridges (RuBs) by 2019. Railway crossings slow down the traffic and cause many accidents. The Setubharatam Pariyojana will ensure the high speed road vehicular movement and train movement. Deadline for the completion of Setubharatm Pariyojana is in 2019, which is three years before the completion of entire Bharatmala project (in 2022).
- IV. District Headquarters Connectivity Scheme for development of 9000 kms of road, to be declared as National Highway and to provide better connectivity between district headquarters.

Public Private Partnership (PPP)

To augment resources and management/ implementation of projects, Government has involved private sector in a big way under PPP mode. On evaluation of its somewhat tardy progress, and to address some of the bottlenecks in speedier implementation of these PPP projects, Government had set up a high level Expert Committee under Dr. Vijay Kelkar (Box 1). The key recommendations included introduction of hybrid models, viable gap funding, part annuity, operation and maintenance grants etc. for non-BOT projects, relaxation of exit norms, quick disposal of pending cases and shift to electronic tolling in a time bound manner.

Box 1

Kelkar Committee suggestions on revitalizing the PPP model of Infrastructure development:

- More focus on service delivery by performance monitoring.
- No PSU/State owned enterprise should be allowed to bid for PPP projects.
- Risk allocation and management.
- Setting up an independent

The Government considered the recommendations and introduced, among other reforms, a hybrid model (Box 2). Accordingly, the Government undertook the responsibility for arrangement of land and environmental clearance, and part funding, the rest being with private operator. These measures have helped in revitalizing the PPP mode. A number of stuck projects have been revived, the rate of construction of highways gone up to over 22 km per day and expected to go up to 30-40 km per day soon. As on January 2017, India has 1422 PPP projects out of which 708 projects are either completed or at Operations and Maintenance Stage⁵.

⁵ PPP Cell, Infrastructure Division, Department of Economic Affairs, Government of India.

Through a combination of initiatives, the Government has already achieved a breakthrough in road sector, unblocking previously stuck road projects, and accelerating new projects. Of the total numbers of stuck projects worth INR 3.8 lakh crore, the Government has already unblocked INR 3.5 lakh crore worth of projects. This has given a new dynamism and vigor to the sector.

Rural roads comprise 60 percent of the total road network in India and are crucial for inclusion of remotest areas into the market economy. The Pradhan Mantri Gram Sadak Yojana (PMGSY), initiated in the year 2000, aimed at providing all weather road connectivity to every rural habitation with a minimum population of 500 in the plains and 250-plus in hill states, tribal districts and desert areas. A network of 4,93,444 km has already been achieved under the program by 4th Feb 2017⁶.

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Pace of construction of PMGSY roads accelerated to 133 km roads per day in 2016-17, against an average of 73 km during 2011-2014. However most of the good work still suffers from poor maintenance by the state agencies responsible for these, as detailed in Box-3. The development of road infrastructure also helps to fortify internal and external security architecture of India. According to a recent study, efforts to spur economic and social infrastructure in Red Corridor reduces violence in the long run.⁸ The study also points out that interventions like PMGSY, RGGVY and Universal Service Obligation Fund (USOF) have proved effective in reducing violence.

Box 2

Hybrid Annuity Model (HAM)

Hybrid annuity means that payment is made in a fixed amount for a considerable period and then in a variable amount in the remaining period.

In this, Government will contribute to 40% of project cost in the first five years through annual payment (annuity). The remaining payment will be made on the basis of the assets created and the performance of the developer. Here, hybrid annuity means the first 40% payment is made as fixed amount in five equal installments whereas the remaining 60% is paid a variable annuity amount after the completion of the project depending upon the value of assets created.

Box 3

Maintenance of PMGSY roads

A PMGSY audit of maintenance activities estimated that only 30% of maintenance requirements are met for the network as a whole and even under the five-year maintenance contracts surveys reveal that only 25% of within this cluster, roads are fully maintained with 30% not receiving maintenance at all.

⁶ <http://omms.nic.in/>.

⁷ <http://omms.nic.in/>.

⁸ Eynde et al. (2015) "Connecting the Red Corridor: infrastructure development in conflict zones" IGC working paper - (<http://www.theigc.org/wp-content/uploads/2015/08/Shapiro-et-al-2015-Working-paper.pdf>).

Railways

Indian Railway network is the life-line and growth engine of the Indian economy. India has world's third largest rail network in the world with a total route network of about 66,030 km spread across 8,500 stations and has a special place in the Indian ethos. It has around 13,000 operational passenger trains carrying over 23 million passengers daily with passenger traffic of almost 8.2 billion people in FY-16. On the commercial front, railway transported 1107 million tons of freight in FY-16, crucial for country's economy, comprising mineral ores, iron and steel, fertilizers, petrochemicals and agricultural produce.

This year, railway budget was merged with the Union Budget for the first time. This is not only an administrative and financial measure, but would also help in taking an integrated view of *multi modal transport*, and help to plan integrated facilities for seamless transport connectivity to passengers and goods. Steps will also be taken to launch dedicated trains for tourism and pilgrimage. Coupled with new initiatives for upgradation of infrastructure and special coverage under 'Swachh Bharat Abhiyan' there, this will give a boost to tourism at these places. There was allocation of Rs 17,810 crore for metro projects, a jump of nearly 14% over last year's allocation.

The average rate of expansion of tracks in railway has risen to 7 km per day during 2015-16 from 4.3 km per day during the previous six years. New projects approved include: construction of high speed rail between Ahmedabad and Mumbai, modernisation of 400 major railway stations, construction of dedicated eastern and western freight corridors of 1,305 km and 1,499 km respectively and laying down of 1,875 km of new railway lines. Connectivity of north-eastern region with the rest of India has been fast-tracked.

There are several other new initiatives – an independent regulator is in the offing, to encourage private investment in the sector. A Bill to set up an independent regulator for the Railways is likely to be presented in the next session of the Parliament. Its functions will include setting tariffs, ensuring level playing field, determining efficiency and performance standards. To boost trade and commerce in the Asia-Pacific region, a trans-container goods train connectivity from Dhaka to Istanbul covering Bangladesh, Bhutan, India, Nepal, Pakistan, Afghanistan, Iran and Turkey is being considered by the Indian Railways along with neighboring countries.

Ports and Shipping

Adequate and efficient infrastructure in ports and shipping is crucial for the growth of India's trade. Through a number of measures, efficiency at major ports has substantially improved, with operating profits going up 43% in 2014-15 over that of 2013-14 and further 16.2 percent in 2015-16. In 2015, addition of 93 mn tones to port capacity was the highest ever.

India has a coast line of more than 7517 km long, consisting of 12 major ports (six on the Eastern coast and six on the Western coast) and 200 non-major ports (of which one-third are operational) which are strategically located on the world's shipping

routes. Most cargo ships that sail between East Asia and America, Europe and Africa pass through Indian territorial waters. Port traffic in India is set to rise at a compound annual growth rate (CAGR) of 29.2 percent over FY 15-17. There is need to further upgrade infrastructure, and provide seamless connectivity with other modes of transport for efficiency in logistics. Several new initiatives are underway – the Sagarmala Project is designed with the above need. It is India's major port development project, to slash logistic cost via port modernisation, and promote port-led direct and indirect development, and to provide inter-modal infrastructure's solutions for a quick, efficient and cost effective transportation through rail, inland water, coastal and road services. The Sagarmala Project (Fig. 3) depicts besides major and non-major ports, 14 coastal economic zones being developed around them.

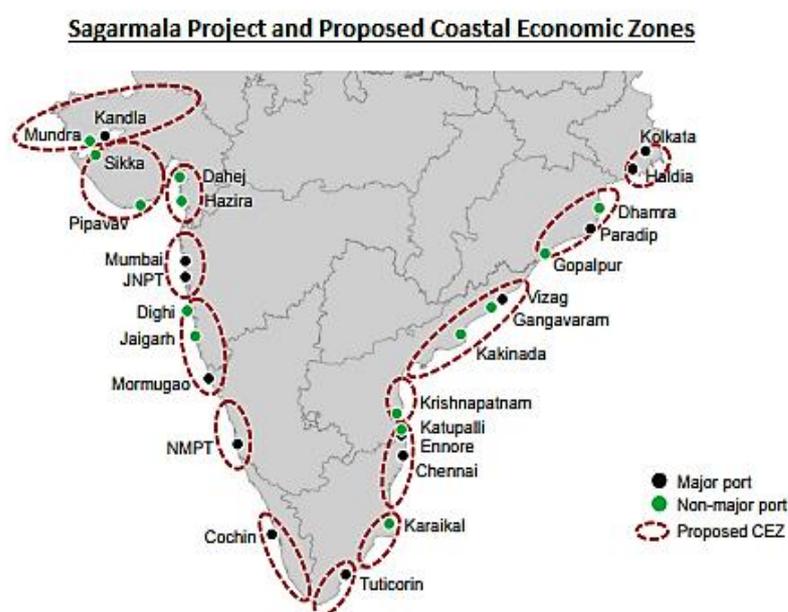


Figure 3 - Sagarmala Project (Source: IBEF)

Integrated Transport and Logistics Policy

There is a dire need of improving infrastructure for logistic sector. Logistics cost in India is a high USD 7 per km for road transport as compared to USD 2.5 in China, USD 3 in Sri Lanka and USD 3.9 in Bangladesh. An integrated transport and logistics framework is expected to increase the average speed of freight transportation on the highways network from the current speed of 20-25 km/hour to 50-60 km/hour, and reduce logistics cost by half. This will bring together road, rail, air and urban planning to provide seamless movement of freight traffic across States.

The policy aims at shift from 'point-to-point' model to 'hub-and-spoke' model, with an investment of INR 5 lakh crore, raised through budgetary allocation, NHAI bonds and leasing out existing national highways to investors and pension funds (on TOT model) for collection of tolls and operations.

Inland Waterways

India has about 14,500 km of navigable waterways (Fig. 4) which comprise of rivers, canals, backwaters, creeks, etc. About 55 million tons of cargo is being moved annually by Inland Water Transport (IWT), a fuel-efficient and environment-friendly mode. The total cargo moved (in ton km) by the inland waterways has however been only 0.1 percent of the total inland traffic in India, compared to the 21 percent figure for United States. There is a great potential of exploiting this unutilised potential. Besides, there is also great scope of tourism promotion through this mode, in places like Varanasi, Agra and other historic centers.

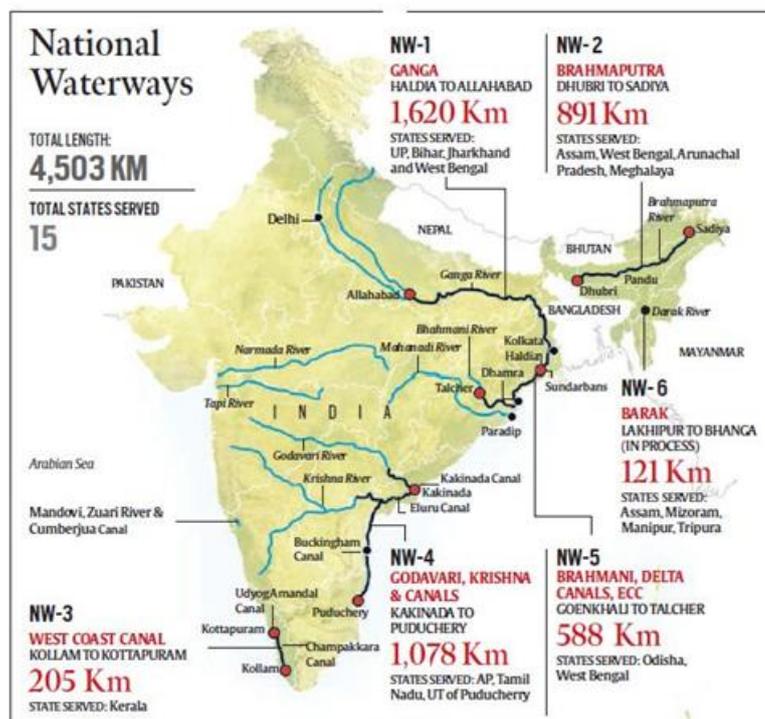


Figure 4 – National Waterways (Source: Wikipedia)

Aviation

Aviation is crucial for quick and efficient development of trade and tourism and has a strong multiplier effect on other sectors in the economy. According to an estimate in the global economy by ICAO, every \$100 of output produced and every 100 jobs generated by air transport trigger additional demand of some \$325 and 610 jobs in other industries. A number of new initiatives have been taken. In domestic civil aviation which is recording a phenomenal increase, number of passengers recorded an increase of 20 percent (66 mn in 2014 to 80.8 mn in 2015) in just one year as compared to 8 percent (16.9 mn to 18.4 mn) internationally during the corresponding period.

As India moves forward to become the third largest civil aviation market in the world by 2020, it faces multiple challenges in terms of infrastructural constraints. According to Airport Authority of India (AAI), while cargo carried by air in India weighs less than 1 percent of the total cargo exported, it accounts for 35 percent of the total value of exports. Most airports are fast approaching saturation, face problems of

capacity, cost pressures and sub optimal passenger load. There is a need to build more airports especially in smaller cities, including NE and remote regions, for better connectivity and incentivising connectivity. The recent budget has addressed several of these problems, and new Civil Aviation Policy and related measures are designed to achieve it.

Telecom

Telecom as one sector has the largest positive multiplier impact on economic growth. Besides direct and indirect jobs within itself, it also supports various other activities (like, e-governance, IT industries, banking and financial services, trade, education, health) and provides platform for Start-up India and Stand-up India, generating multitude of jobs. It is estimated that every 10% increase in mobile penetration results in 1.2 percent increase in GDP on long term basis. This has become even more essential post-demonetisation.

By the end of 2017-18, high speed broadband connectivity on optical fibre will be available in more than 1,50,000 gram panchayats with wi-fi hotspots and access to digital services at low tariffs. An outlay of INR 1,130 billion has been made for 'Digital India' initiative to prepare India for a fast-tracked development of a knowledge based economy. The Bharat Net project has been allocated INR 10,000 crore in the Union Budget 2017. Also, a 'Digi-Gaon' initiative will be launched to provide financial services, tele-medicine, education and skills through digital technology besides e-governance, e-marketing and variety of other services.

India has achieved world recognition for the IT talent of its youth, and R&D centers of most multi-national companies, and back-end operations of World Bank several multi-lateral organisations are located here. With the protectionist policies in US and elsewhere, there is a great opportunity for the future Google's, Facebook's, Twitter's, and Airbnb's to emerge as Indian start-ups, and corresponding supporting eco-systems built.

Internet Speed and Cyber Security

For a cashless economy and e-banking, there is a need of high internet speeds and high cyber security. The download speed in India ranks 96th in the world, behind Bangladesh and Nepal. Besides, it is highly vulnerable to cyber-crime. Cyber-security is extremely critical now for defense usages too. As mentioned by the Defense Minister, "Future wars will be fought in cyber space". The need to ring-fence and guard our information highway and installations is of utmost crucial importance now. The Government is actively seized of the matter and several initiatives are underway. National Cyber Co-ordination Centre is the agency engaged in Cyber Security and e-surveillance, screen communication metadata and co-ordinate the activities with other agencies.

Energy

India is the third largest consumer of electricity⁹ in the world (1287 TWh-2014). The power sector has four major sources of power generation which includes thermal, Hydro, Renewable (solar and wind energy) and Nuclear. In this, thermal energy has maximum installed capacity of about 70 percent of total installed capacity, and other sources like hydro, renewable and nuclear have approximately 14 percent, 14 percent and 2 percent respectively. With huge potential in North East region, there is a greater need of fuller exploitation in the hydro sector.

As a result of various new initiatives, several major projects have been put on the fast-track and choked channels of inputs unclogged. To resolve the critical situation of coal supply, the Government passed an ordinance (later replaced by an Act) and auctioned coal blocks to remove the shortages. It transferred INR 3.44 lakh crore revenues over the lifetime of these blocks to the concerned States (where these blocks were situated). As a result of these measures coal production has acquired a new momentum, with the output rising by 32 mn tones in 2014-15 as against the increase of 31 mn tones in previous 4 years taken together. There has been a further growth of 9 percent during 2015-16. The Government is also rapidly moving ahead with underground coal gasification, with three lignite blocks identified as candidates.

Solar and Renewable Power

The Government targets to add 175 GW of renewable power in India by 2022. This includes: 100 GW of solar power, 60 GW of wind power, 10 GW from biomass power and 5 GW from small hydro power.

India has the unique advantage of maximum sunshine round the year. The Government has given tremendous thrust to solar energy program in the country. Installed solar capacity has increased from 20MW in 2011 to 8GW as on July, 2016, and expected addition of 8.8GW in 2017, securing position in the world's top three solar markets after China and USA. In the Budget, it has been provided to take-up the second phase of solar-park development for additional 20 GW capacity. The average harmonized solar cell price has been INR 4.31 per unit across the 15.9 GW of projects auctioned during July 2015-December 2016, and in a recent bidding for the Rewa Solar Power Park in Madhya Pradesh, has touched a new low of INR 2.97 a unit. The Budget has also allocated INR 10635 crore on Integrated Power Development Scheme, and 100 percent rural electrification is targeted under 'Deen Dayal Upadhyaya Gram Jyoti Yojna' to cover all the remaining 18,542 un-electrified villages by mid next year¹⁰.

Housing for All

The Government has targeted housing for all by 2022. The President of India, in his address to the Joint Session of Parliament on 9th June, 2014 had announced, *"By the time the Nation completes 75 years of its Independence, every family will have a 'pucca' house with water connection, toilet facilities, 24x7 electricity supply and access."* The Central

⁹Global Energy Statistical Yearbook 2016

¹⁰ India: Transforming through radical reforms, Ernst & Young LLP, February 2017

Government has launched a comprehensive Mission ‘Pradhan Mantri Awas Yojana’ – Housing for All (Urban). The Mission includes the following components:-

- Slum rehabilitation of Slum Dwellers with participation of private developers using land as a resource.
- Promotion of Affordable Housing for weaker section through credit linked subsidy.
- Affordable Housing in Partnership with Public & Private sectors.
- Subsidy for beneficiary-led individual house construction/enhancement.

The Program will be undertaken through convergence with various other Ministries, Industries (housing for industrial employees, and involving State Governments), Railways (on Railway slums), etc. and Ministry of Urban Development through the ‘Atal Mission for Rejuvenation and Urban Transformation, (AMRUT) of 500 cities. A Technology Sub-Mission under the Mission would be set up for adoption of modern innovative and green technologies and local building materials for faster and quality construction of houses. It will also help in preparation and adoption of designs suitable for various geo-climatic zones, and deploying disaster resistant and environment friendly technologies.

AMRUT is an ambitious program for providing basic services (water supply, sewerage, urban transport) to households and build amenities in cities which will improve the quality of life for all, especially the poor and disadvantaged. 500 cities will be taken up under the Mission, and its components include capacity building, water supply, sewerage and seepage management, storm water drainage, urban transport and development of green spaces and parks. The Mission will be operated as a Centrally Sponsored Scheme, and an outlay of INR 50,000 crore has been made for five years from FY 2015-16 to FY 2019-20. State Level Improvement Plans (SLIPs) will be prepared and approved by the Ministry of Urban Development.

Under the Pradhan Mantri Awas Yojana (Gramin) program, in its first phase the target is to complete 1 crore houses by March, 2019. The unit cost for these houses involves a minimum support of nearly INR 1.5 lac to INR 1.6 lac to a household. There is also a provision of Bank Loan up to INR 70,000, if the beneficiary so desires. The program provides for skilling 5 lakh rural masons by 2019 and allows 200 different housing designs across the country based on local conditions. There is an outlay of INR 819.7 billion, and special thrust is sought to be given to hilly areas and those under Maoist insurgency. The program is progressing well, with 16.5 lakh houses already completed, 34.6 lakh houses under construction, 65.6% target achieved and 72.5 percent funds utilised.

Financing Infrastructure

The needs of infrastructure are humongous- over a trillion dollars over the next 5-7 years. Besides funding from the own budgetary resources, Government is tapping all other possible avenues including loans from World Bank, ADB, other institutions and Banks, FDI, pension and insurance funds, sovereign wealth funds, private capital under PPP, etc.

Under a new terms of trade (TOT) initiative to monetise the existing toll projects, National Highway Authority of India (NHAI) is in the process of monetising around 75 operational toll road projects with cumulative length of about 4200 km and annual revenue of INR 2500 crore (US \$ 375 million). The operational road projects will be bundled into packages and tendered out. The first bundle comprising of projects in South and Eastern region is expected by May 2017. Size of each such bundle is expected to be around US\$ 500 mn-1 billion. In the Budget, it has been provided that Insurance companies must invest 5 percent of their funds in infrastructure which include affordable housing, which has also now been given infrastructure status. Detailed guidelines have also been issued by the Insurance Regulatory and Development Authority (IRDA) on 14th March, 2017.

The Government has set up National Investment and Infrastructure Fund (NIIF), as announced in the Union budget 2015-16, with a proposed corpus of INR 40,000 crore, which may be raised from time to time. The Government's share/contribution in the corpus will be 49 percent, the balance 51 percent raised from strategic anchor partners viz., Multilateral/bilateral institutions, Sovereign Wealth Funds, Pension funds and domestic Public sector enterprises. This would help in leveraging resources from public as well as private sector and augmenting equity flow to infrastructure projects. Another important development being the establishment of Infrastructure Investment Trust (InvIT) is also designed to provide support to the over-leveraged infrastructure developers.

One of the major problem areas in raising finances from Banks has been their stressed assets, India has a total of 7 lakh crores bad and toxic loans. It is critical to find an early resolution to the problem and open the clogged channels of credit, to finance infrastructure projects. There have been proposals to create private asset management company (PAMC) to deal with problem, and Economic Survey 2017 also talks about centralised Public Sector Asset Rehabilitation Agency (PARA). RBI has set up S4A (Scheme for Sustainable Structuring of Stressed Assets) and Government to set up Oversight Committees (OCs) to monitor loan recast packages. Most of the corporate debt restructuring packages are from infrastructure, power, steel, mining and telecom sectors. It is hoped that with some of these initiatives, it will be possible to address this complex problem.

Unlike the developed world, however where long term debt can be mobilised from the capital market, the bond market in India is yet to fully develop and mature. The Government is seized of the matter and has taken several measures to address it.

Conclusion - and Going Forward

India today is brimming with new hope, energy and excitement of a new future. The decisive mandate of UP elections and in other States has demonstrated the strong quest everywhere for a faster development and economic growth. These elections have signaled an end of the traditional cast and communal politics. To meet the hopes of our people for a better and quality life, and aspirations of our youth for employment and brighter future, a fast-tracked Infrastructure development is the critical need of the

hour. The results must also reach all sections of people, in every corner of the country.

As rightly stated by the noted Economist Dr. V. K. R. V. Rao, “*The link between infrastructure and economic development is not a once and for all affair. It is a continuous process; and progress in development has to be preceded, accompanied, and followed by progress in infrastructure, if we are to fulfill our declared objectives of generating a self-accelerating process of economic development.*” This is even truer today.

As enumerated in the above article, infrastructure is the backbone of economic development and key to the efficiency of all investments, domestic and foreign. It is also crucial for Country’s security, disaster preparedness, strategy for poverty reduction and employment generation. The regulatory cholesterol inhibiting investments and growth has to be removed, and eco-systems built to attract global FDI and technologies. Obviously, it cannot be a “business as usual” any more. It is necessary to inject a war-like urgency, overhaul our policies and priorities, introduce world class practices, modern technologies in material and project management, and build in accountability and responsiveness. There has to be “*commercial management, competition, and stakeholder involvement*”. The World Bank Reports on Infrastructure mentions that:-

- Manage infrastructure like a business, not like a bureaucratic service. It should be run like a service industry, responsive to the needs of customers.
- Introduce ‘*competition*’ - competition gives choices to users and brings in efficiency and accountability. Any monopoly breeds inefficiency and lethargy.
- Give users and affected stakeholders a sense of participation and voice. This could be done in spheres like planning, design, operation, safety, etc.
- Introduce technology - new technology innovations in management, implementation, materials and machinery, etc. can reduce costs and modernise usage. There could also be new evolving global standards, which may also facilitate global investments.
- Upgrade capacity - it would be important to build and upgrade capacity, of management, implementation, contractors, skilled technicians, enabling them to undertake desired projects.
- Continue active and facilitative role of Government, sometimes in a more intense way in financing and sometimes implementation (EPC Model).
- Ensuring that the infrastructure development which is capital intensive, with long gestation period, does not suffer from dearth of financing, provide adequate set of incentives to attract funding through various modern instruments.
- Introduce a system of recognition for early or timely completion (Delhi Metro was a classic example of timely implementation) and penalties for delays and thereby cost over-runs.
- There is a dire need of effective coordination between and centre and state agencies, and institutionalise a vibrant *single window process* for planning and implementation, with milestones and time bound implementation.

It is fortuitous that the present Government has accorded infrastructure development the much needed priority and put various policies in place to fast-track miracle growth with speedy execution.

To conclude, our path in the quest to reach the top may be difficult but we are set on the right track, with speed, confidence and determination. Now, as Swami Vivekanand had thundered-“*Rise, awake and stop not until the goal is reached*”.

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