CHAPTER

10 INFRASTRUCTURE DEVELOPMENT

10.1 INFRASTRUCTURE IN GLOBAL CONTEXT

Overall infrastructure basically comprises of crude oil exploration and refining, electricity generation, coal, steel, cement, communications and transport (rail, road, ports and airports). Infrastructure is also segregated as rural infrastructure (comprises of irrigation, roads, electricity and creation of social assets in villages) and urban infrastructure (comprises of public transport, up-gradation of roads and civic amenities in urban areas).

There is also reference nowadays to soft infrastructure which is education and skill development, human capital development. While all these are important but in terms of criticality it is the overall infrastructure and with increased growth there is need for more than proportionate growth in infrastructural sector investment to match the growth of the economy.

India's infrastructure can be known to be adequate solely in respect of communications and in all other areas as deficient. Infrastructure globally has certain unique characteristics as mentioned below:

(1) It is a dynamic concept implying continuous investments in infrastructure. It can never be said to be 'adequate'.

(2) Infrastructure growth has to precede growth of economies. First roads need to be re-built before cars are manufactured or factories can be set up only once electricity is there and not the other way around.

(3) Infrastructure has to be for 365 × 24 hours leaving no scope for reactive maintenance (after break-downs) but has to be proactive maintenance (before break-down).

(4) Infrastructure development requires visioning, always for the future and not for the present as otherwise given their long periods for completion they would become inadequate once completed.

(5) Infrastructure always needs to be seen from a global perspective and not from the past history.

   (a) For example, the Government of India can take pride in mentioning that in the last 10 years they have constructed 8000 km of highways a feat never achieved in the past.

   (b) However, in the same period China has constructed 25,000 km of highways. Infrastructure comparison is always global.

(6) Infrastructure has always example: Hyderabad air airport, faster check-in c away from the city.

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10.3 RECENT MEAS

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(6) Infrastructure has always got to be 'effective'. This can be defined with the following example: Hyderabad airport in India is world class. It has cut down time at the airport, faster check-in can handle manifold more passengers but it is located further away from the city.

Hence, what one has gained in saving the time at the airport has got lost in travel time to the airport. So what effective infrastructure implies is while building the airport simultaneously start the process of either widening the road to the airport and if it is not feasible explore an alternate entry point to the airport from the city.

10.2 ISSUES IN INDIAN INFRASTRUCTURE

(1) **Need for Long-term Resources**—it has been estimated by the Planning Commission of India that an investment of US$ 1000 billion is required in overall infrastructure alone over the next 10 years.

This will be US$ 500 billion in the next five years or an annual investment of US$ 100 billion for sustaining the present levels of growth and if we are talking about higher levels of growth, the magnitude of investment will only increase further.

This would mean that investment in infrastructure which is presently around 5.5 per cent of GDP would have to be more than double to 12.5 per cent.

Infrastructure projects have long gestation period raising such long-term resources on an ongoing basis is a major issue. Such long-term funds are usually available in insurance and pension funds both of which are relatively still evolving in India. Insurance penetration is very low and so are pension funds.

Banks are not able to take exposures given the need for long-term resources as it will result in mismatch between assets and liabilities and can weaken the banks.

(2) **Pricing of Infrastructure**—another issue is the under-pricing (pricing less than the commercial viability in terms of the market) of infrastructure which has questioned its sustainability in the long run.

(3) **Absence of Visioning**—as mentioned previously, a key feature of infrastructure is the need for visioning say Infrastructure in India 2050. No serious thoughts are being given to the requirement of infrastructure over the next 30–40 years.

(4) **Infrastructure as a National Issue**—infrastructure development continues to be driven through various governments in terms of their own priorities.

One government may favour building highways whereas another government may feel making rural roads a priority. Infrastructure has to be made apolitical or cutting across party lines as a national issue.

10.3 RECENT MEASURES TAKEN BY THE GOVERNMENT

The government realizing the importance of infrastructural sector has taken a number of steps that are briefed below:

(1) It has set up the India Infrastructure Finance Company Ltd., (IIFCL) exclusively for leveraging investment in infrastructure projects. It is expected to leverage an investment of over ₹ 50,000 crores over a period of time.

(2) IIFCL, Infrastructure Development Finance Company (IDFC), Citigroup, and Blackstone Group have jointly announced a launch of US$ 5 billion fund to finance infrastructure projects in India.
(3) IIFCL has set up a subsidiary at London with funds of USD 5 billion to fund Indian companies importing capital goods/machineries exclusively for infrastructure projects in India.
(4) The Planning Commission of India has proposed a USD 11 billion multi infra debt funds for funding infrastructure projects in India.
(5) The government has recently announced the public private sector partnership (PPP) model for infrastructure projects in India.
   (a) This model seeks to leverage on the strengths of the government (inter-ministerial clearances, environment and forest clearances, shifting of vital installations and land acquisitions).
   (b) The private sector is then entrusted the task of building the infrastructure in terms of government specifications by using their own resources in a given time period. There is an incentive mechanism for projects completed ahead of schedule.
   (c) In turn, it allows the private sector to levy pre-agreed 'Toll' (for road projects) or 'user charges' (airports) under the build-operate-transfer (BOT) model of partnership.
   (d) A slight variant to this is design-build-finance-operate (DBFO) where the competence in the 'design' of projects is also done by the private sector rather than by the government.
   (e) Recently, the government under the PPP model has also initiated levying of 'negative grants' for highly profitable road projects.
   (f) The private companies while bidding for such projects would also have to provide the amount of money from their likely future earnings they are willing to give 'Up-front' before the contract is awarded by the government, as what is known as negative grant.

10.4 INFRASTRUCTURE AND ITS KEY CHALLENGES

Despite the efforts of the government as highlighted above infrastructural development still has a few challenges as mentioned below:

(1) The World Economic Forum has ranked India in terms of infrastructure as 89 among 139 countries. Countries such as China have a rank of 50 and Brazil 62. This implies that our infrastructure is viewed as grossly inadequate by global standards.
(2) Raising long-term resources would require reforms in banking, insurance and pension funds as that is where long-term resources are available.
(3) Further, long-term resources for infrastructure can also come through foreign investment (like in case of China) and government would have to further liberalize its policies to attract foreign investment in India.

(4) The PPP model is appreciable but cannot substitute government spending given the huge magnitude of resources required. It can at best play a supportive role in infrastructure development.

(5) India's metro infrastructure of Delhi, Mumbai and Chennai are virtually collapsing despite efforts of the state government. Even the major urban centres are having severe infrastructural constraints, despite having the Jawaharlal Nehru National Urban Renewal Mission (JNNURM).

(6) That is, to say the government cannot absolve itself of its responsibilities of infrastructure development.

The twin challenges are as follows:

How would the government raise resources given the budgetary constraints? The compulsions of the Fiscal Responsibility and Budget Management Act (FRBMA) would not only allow it to raise expenditure to keep the deficit level under check. The government has a legacy of an inefficient spender in the economy with as many as three hundred government projects delayed by over eight years with a cost over-run of ₹49,000 crores.

How to make the government an efficient spender in the economy? There are myriads issues of land acquisition, inter-ministerial coordination and bureaucratic delays which is inbuilt in any government functioning.

The other is that we have to learn from the Chinese experience in infrastructure development. They have kept the scale of existing ideas, instructive and unconventional, something as unbelievable.

Globally, it was believed that trains running over 450 km per hour was technically and scientifically not possible. The Chinese have proved every one wrong. They have constructed around 17 bridges over one river which is 100 years maintenance free and many of them are the longest in the world and completed in record time.

Beijing, their capital, has an airport which is bigger than Heathrow of London and is sufficient to meet the passenger and cargo load for the next 25 years. Their rail link of 2000 km from mainland China to Tibet at a height of over 15,000 ft is an engineering feat in itself.

India is still bogged down with playing around with existing ideas, existing knowledge and technology. India requires 'innovative infrastructure', the impossible infrastructure, beyond conventional and then just do it the way China has done and thus requires infrastructure visioning, making it a-political, cutting across political parties with the objective of providing the infrastructure to support higher rates of growth and at the same time not only world class but defining newer boundaries of infrastructure.

10.5 ENVIRONMENTAL ISSUES AND INFRASTRUCTURE

A still larger issue now emerging is the environmental issues, erosion of forest cover, etc., around the infrastructure projects. The present issues being faced in Orissa and other states on projects which can not only alter the face of the state but also the nation in terms of economic development need deeper introspection.

The environmental issues raised on companies such as POSCO and the Vedanta Group in Orissa may deny an investment opportunity in the state of over ₹60,000 crores which has the potential to transform Orissa from being a backward to a progressive state.

Similarly, stalling the Lavasa project in Maharashtra, is a myopic view by the government as it has the potential to redefine the urban development and probably post-construction would be extremely environment-friendly more than any other city in the country.

The Prime Minister has indicated that there should be a balance between the two aspects. However, development should be a prime concern clearly as it involves the people, means of livelihood for them as fundamentally more important today.

It needs to be remembered in mind that improvements in welfare of people and states should be the prime consideration and 'way out' should be found for addressing the environmental issues and the way out should not be by abandoning the project but finding the ways around them.

Are these the only environmental issues? What about the issues of slum development, waste management, banning use of plastics, rural/urban habitation, polluted rivers, erosion of forest cover? Are these not major issues?

India has myriads of issues of unemployment, acute backwardness of states, development deficit, investment deficit, development divide across many states and such other divides. If it is possible for the private/foreign players to provide answers for such divides, their projects should be encouraged rather than discouraged and a way out found for them.

This is a government-related issue of being short sighted in the guise of environmental issues, over-looking positive and tangible welfare gains for the states and the country as a whole. India, thus, has a number of infrastructural related issues, which will solely get compounded with increased intensity as the growth levels begin to accelerate and also with the growing population exerting greater pressure on the infrastructure.

The government can also consider of having a separate budget for infrastructure. The railway budget could constitute a part of this budget allowing for greater complementarity between various sectors of infrastructure.

There is a need for a greater broad-based discussion on the imperatives of infrastructure in future as otherwise it will become a limiting factor for growth.

10.6 PORTS IN INDIA—AN ECONOMIC PERSPECTIVE

Globally ports are regarded as gateway for trade of goods and merchandise entry and exit from a country. They also play a pivotal role in accelerating the development of regions/economies. As an open economy, neglect of ports can solely be at the expense of development of such economies.

India's fact sheet of ports consists of twelve major ports (two additionally approved—one in West Bengal and the second at Andhra Pradesh) and two hundred odd minor ports accounting for 95 per cent of cargo movement by volume and 70 per cent by value. The present port capacity is around 1000 million tonnes (MT).

Imports of crude petroleum, iron ore, coal and other essential commodities are all through the sea route. Realizing the importance of developing our ports to handle large volumes and increase cargo movement, the government has allowed 100 per cent private

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sector and 100 per cent FDI participation in this sector. Further, a 'Maritime Agenda 2010–2020', a perspective plan has been prepared which has set the goals as follows:

(1) To increase India's share in global ship building to 5 per cent from the present 1 per cent.
(2) To increase the share of Indian seafarers from 6–7 per cent to at least 9 per cent in the global shipping industry during 2015.
(3) To create a port capacity of around 3200 MT to handle the expected traffic of about 2500 MT during 2020.
(4) To bring ports at par with the best international ports in terms of performance and capacity.
(5) To increase the tonnage under the Indian flag and Indian control and also the share of Indian ships in our exim trade.
(6) To promote coastal shipping as it will help in decongesting our roads and is environment-friendly.
(7) In order to promote private participation and foreign direct investment (FDI) in the country, the Government of India has allowed 100 per cent FDI under the automatic route for:
   - Captive facilities for port-based industries.
   - Leasing of equipment for port handling and leasing of floating crafts.
   - Leasing of existing assets of ports.
   - Construction/creation and maintenance of assets such as-container terminals bulk/break bulk/multi-purpose and specialized cargo berths, warehousing, container freight stations, storage facilities and tank farms, handling equipment, setting up of captive power plants, dry docking and ship repair facilities.

As way of incentive, 100 per cent exemption from income tax is also extended to companies that are investing in port infrastructure. Further, a ten-year tax holiday has been given to enterprises which are engaged in the business of developing, maintaining and operating ports, inland waterways and inland ports.

India's shipping ministry is considering in removing the tariff fixing for major ports, passing responsibility for this to the ports themselves. Instead, a new regulator for the sector will be appointed who will be responsible for setting, monitoring and regulating service levels as well as technical and performance standards. The ministry has also decided that all new major ports would be constructed through a corporate structure and will be registered under the Companies Act 1956.

Source: Consolidated FDI Policy, Department of Industrial Policy and Promotion (DIPP)

Port Development in Twelfth Five-Year Plan

According to the Planning Commission of India, the capacity of Indian ports will have to nearly double to 2302 MT over the next five years to be able to handle the fast growing cargo traffic. The total capacity of the port sector is envisaged to be 2301.63 MT, to meet the overall projected traffic of 1758.26 MT by 2016–2017, as per the Twelfth Five-Year

Plan (2012–2017) document. 'The traffic forecast by the end of the Twelfth Plan would be 943.06 MT and 815.20 MT for the major and non-major ports respectively, with corresponding port capacities of 1241.83 and 1059.80 MT respectively'.

In the Twelfth Five-Year Plan, the Government of India has proposed to invest ₹73,793.95 crores (US$ 13.55 billion) for development of various projects in port sector. In the year 2012–2013, twenty-five projects have been identified for award at various major ports in the country under PPP mode.

Recent Government Initiatives

Contract to develop the Jawaharlal Nehru Port Trust's (JNPT) container terminal at Navi Mumbai has been awarded to a Dubai-based company at a total cost of ₹600 crores (US$ 100.20 million). Gail India and the Shipping Corporation of India (SCI) have signed a memorandum of understanding (MoU) to cooperate for transportation of liquefied natural gas LNG sourced by Gail from the United States (US).

The government has approved the project for upgradation of an existing facility and the creation of a new facility at Visakhapatnam Port Trust (VPT) for iron ore handling in two phases on design, build, finance, operate and transfer (DBFOT) basis with an investment of ₹845.41 crores (US$ 153.95 million).

Three major projects, with an investment of ₹1800 crores (US$ 330.08 million), are being taken up by the VPT. The Union Shipping Ministry has started working on some of its plans such as corporatization of major port trusts. Mumbai's JNPT will be the first port to be corporatized. There are 14,500 km of navigable and potentially navigable inland waterways in the country of which the following five inland waterways have been declared as National Waterways and the details are listed below.

- National Waterway-1—Allahabad–Haldia stretch of the Ganga–Bhagirathi–Hooghly river (Total length 1620 km) in the states of Uttar Pradesh, Bihar, Jharkhand and West Bengal.
- National Waterway-2—Sadiya–Dhubri stretch of the Brahmaputra river (Total length 891 km) in the state of Assam.
- National Waterway-3—Kollam–Kottapuram stretch of West Coast Canal and Champakara and Udyogmandal canals (Total length 205 km) in the state of Kerala.
- National Waterway-4: (Total length 1027 km) in the states of Andhra Pradesh and Tamil Nadu and the Union Territory of Puducherry.
- National Waterway-5: (Total length 588 km) in the states of West Bengal and Orissa.

The government has approved projects for development of multi-purpose berths as well as merchandised berths with allied facilities on DBFOT (design-build-finance-operate-transfer) basis at Haldia Dock II (North) for a period of 30 years at an estimated cost of ₹821.40 crores (US$ 151.39 million) and at Haldia Dock II (South) for a period of 30 years at an estimated cost of ₹886.10 crores (US$ 163.32 million). The projects will enable Kolkata Port Trust to enhance its capacity by 23.4 million tonnes per annum (MTPA) and meet the demand for coal and other bulk cargo in the hinterland of Kolkata Port.

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10.7 INDIAN RAIL

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The government has also approved licensing of land to the concessionaires for seven projects which are taken up in the PPP mode. These projects have been taken up in terms of the extant policy of the Government of India to pursue maritime development projects under the PPP mode. This will lead to efficiency in operations at major ports which will benefit trade and the economy as a whole.

Larger Issues of Ports in India

Notwithstanding the recent efforts of the government in augmenting capacities in ports in India there are certain critical issues which need to be resolved. They are as follows:

Development of port infrastructure in India is not on par with the other ports across the world. Trade in India has to face severe challenges due to inefficient port services. Shipping lines avoid touching ports in India because of the long waiting time. The capacity of various ports including Mumbai has already been exhausted and now capacities of other ports such as JNPT are on the verge of exhaustion.

Port development has to seen in a holistic and comprehensive manner and not in isolation. They have to emerge as integrated transport centers as logistics platform covering links to the hinter land with the rail road network. There has to be complementarities between rail, road and ports, seen as one and not separately.

Indian ports are not equipped to handle large containers as a result ships are re-routed and parked at other larger ports and cargos are loaded in smaller vessels to facilitate their entry/exit out of the country. This raises costs and also transit time. India is heavily dependent on Colombo as a transshipment hub which has both economic as well as political implications.

India also needs 24 × 7 custom cargo clearance facilities besides excessive paperwork and documentation requirement solely increase transaction cost. Average turn-around time of vessels of 3.5 days is very high compared to the international standards which are only in hours and not in days. This is a critical factor which delays consignments making them uncertain, unreliable and uncompetitive in comparison to other ports.

Indian ports also have a high through put and transport cost because of an inefficient, unorganized and un-coordinated truck movement which not only increase costs but also takes more time. It is also subject to frequent labor unrests, which disrupts loading and un-loading at ports.

Efforts at development of ports in India is only a recent phenomenon, however, more than development is to develop them with the future in view and how India can be made a hub for cargo movement. Rapid increasing trade will only add more and more pressure on the already created capacities which need to be augmented on a war footing.

10.7 INDIAN RAILWAYS—A CARRIER OF THE NATION

Indian Railways (IR) is known as the life line of the nation, with a total length of around 64,000 km and the fourth largest network in the world after US, Russia and China. It runs around 12,000 passenger and 7000 freight trains daily. Only recently it has achieved a landmark of crossing 1 billion tonnes of freight movement.

Indian railway has dual function one of running commercially (freight operations) and the other social responsibility of being the life line (passenger movement) of the country. Bulk of the profits of railways thus comes out of freight operations. During 1951–1952 the ratio of freight shares of railways to roadways was 79:21. The railways enjoyed total dominance of bulk cargo as well as retail parcel cargo on medium and long haul routes. However, over the last 60-odd years, the ratio has been completely reversed and now road freight has a market share in excess of 80 per cent. More interestingly, roadways now have 95 per cent share of retail parcel cargo transport. Even in bulk movement the share of rail movement is only 35 per cent and 60 per cent by road. In China, freight movement by road is only 22 per cent while in US it is 37 per cent. This essentially implies that freight movement by road is cheaper than the rail in India unlike other countries such as China and US where movement of freight by rail is cheaper than road.

This is despite the fact that the movement by roads has disadvantages, such as inclement weather conditions, fears of theft, accidents and also involves interstate movement resulting in crossing and checking at octroi check points, which could result in hold up, if papers and materials are not in order.

Problems of Rail Freight

First and the foremost reason for this is the high cost of rail movement arising out of policy of cross subsidization by IR. Passenger fares especially sleeper class are underpriced and made up through increased freight fares. In India, passenger rail fares are highly politically sensitive. However, this is also because of the social responsibility character of IR. At the same time, actual cost should be recovered. If fares are to be kept low, efforts should also be made to bring down costs at the same time. If passenger fares are to be lower than costs, then the difference should be recoverable from the government and not from freight charges.

According to the figures compiled by the World Bank, the freight rates charged by IR are extremely high compared to major freight railways such as US Railroads, Chinese and Russian Railways. In fact, the rates of US Railroads are only one-fourth of that charged by IR. Germany is the only country which has freight charges higher than India, but it is not among the major railway freight movers globally.

This is reflected in a fall in the fare-freight ratio for IR over the last five years, from 0.32 to 0.26. In sharp contrast to this, the fare-freight ratio for China is 1.2 and for South Korea 1.4. The passenger fares to freight ratio for the Chinese Railways is four times higher than that of India. This shows that even a Communist country such as China is charging remunerative fares to run their railway network, which is considered far more efficient than that of India.

Second reason is that over 60 per cent of the freight movement is through electric traction which has high initial capital cost and also high overheads, resulting in higher cost for freight movement. There has always been a debate around diesel versus electric traction. However, there has been no empirical evidence found over superiority of electric over diesel traction. It has been established that initial capital cost of electric traction is manifold more than that of diesel traction. This becomes more relevant in the case of India

as it is deficit in power and electric traction of the railways will always get priority over the other users. The only positive factor is that it does not have variable price like that of diesel. The other point in this is the diesel and electric traction cannot be seen as alternates but as complements and a mix of say 50:50, given the vulnerability of supply and prices of imported crude petroleum.

One method of distribution is to allocate passenger traffic for electric traction and freight traffic for diesel traction. Allocating specific operational and geographic areas to either mode is another method. The objective is to give equal importance to both the modes.

Flexibility of diesel traction is its main advantage. Diesel traction is highly flexible and adaptable to future technological advancements such as the 'fuel cell' technology, posed as a promising alternative source of energy in the near future. Under this technology, a simple device combines hydrogen from a variety of fuels with oxygen from air to produce electricity. This requires no moving parts, and does not produce noise or smoke. Diesel locomotives can be easily converted by replacing engine with fuel cell.

According to the International Railway Journal, fuel cell trains shall be a reality in the near future. All overhead wires will then become redundant. A breakthrough has already been achieved by BHEL, Hyderabad. As and when it is imbibed all controversies around diesel versus electric traction would cease.

It is of vital importance that for the moment, we do not ignore the fact that both diesel as well as electric traction can meet the needs of the IR with equal efficiency. IF electric traction has a high capital cost, diesel traction is highly sensitive to diesel prices. Had diesel prices been that of the eighties, one could say diesel is preferable but not at today's prices. Thus, there should be no attempt at developing one mode at the cost of the other.

Whatever is the mode of movement either by road or rail, the entire logistics sector has a large number of inefficiencies, as a result the cost of logistics in India remains high at 13–14 per cent of GDP as against 7–8 per cent of GDP in developed countries including China.

Remedial Measures

First and the foremost are the passenger fares that need to be raised to cover costs of operations especially for sleeper class in general. Higher classes should be seen from the commercial angle and not as part of social responsibility. If at all, any cross subsidization should be there, it may be 'inter class', between sleeper class and the higher classes.

Secondly, it needs to streamline its freight operation and raise the share in freight movement to around 50 per cent from the present level of 35 per cent which can be done through PPP model and wherever possible through privatization. Towards this the government has taken a few steps in recent times.

Private Sector Participation

Indian railways has announced opening up of freight train and terminal operations to private firms. Under the new private freight terminal (PFT) and special freight train

operator (SFTO) scheme, the ministry has allowed private firms to use the IR's network for commodity transport and to develop freight terminals. Private players will be allowed to set up PFTs and also to operate freight trains. The ministry plans to extend this to the existing registered container train operators and users having private sidings on private land. The license fee, under the SFTO scheme ranges between ₹5 crores and 15 crores, which depends on the commodity being moved.

The SFTO scheme offers a freight rebate of 12 per cent for a period of 20 years until the recovery of investment, whichever is earlier. This could prove to be beneficial to private operators. It also addresses serious issues such as empty return load, which would be exempted from freight charges by the IR. The private operator will be free to charge his customer freight and the handling charges.

The SFTO will be operated for movement of goods such as bulk fertilizers, cement, fly ash, chemicals, petrochemicals, steel, etc. A major concern with logistics companies is the fact that the automobile segment has not been included in this scheme.

Under the PFT policy, operators will be able to book and handle all the traffic excluding outward coal, coke and iron-ore traffic. The revenue sharing for green field projects would start after five years of commissioning the terminal and after two years of commissioning a brown field project. The revenue-sharing model would be of 50 per cent of the then prevailing rate of terminal charge leviable at goods sheds or ₹10 per tonnes, whichever is higher. Revenue sharing will be annually increased by indexing it to increase in whole price index (WPI).

The 'own your wagon' scheme was introduced during 2005. The scheme focused on assured supply of a guaranteed number of rakes every month to a customer based on the number of rakes procured by him with freight concessions. Private firms faced turnaround issues due to congestion and the scheme did not really take off as envisaged.

Dedicated Freight Corridor (DFC)

However, the most ambitious project being undertaken, seen as a game changer, is the dedicated freight corridor (DFC). The Prime Minister has addressed that the DFC Project costing nearly ₹1 lakh crores should be given the highest priority by central ministries and urged the state governments also to do so. The project will connect a land mass over 3300 km in the country and could prove to be a backbone of India's economic transport facility.

The western corridor from Dadri in Uttar Pradesh to JNPT near Mumbai will be 1499 km and will connect Haryana, Rajasthan, Gujarat and Maharashtra with an exclusive high speed railway track. The Eastern DFC from Ludhiana (Punjab) to Dankuni (West Bengal) will be 1839 km long and will connect Punjab, Uttar Pradesh, Bihar and West Bengal. A major part of western corridor will be funded with Japanese assistance and nearly two-third of the eastern corridor will be constructed with World Bank assistance.

With India joining the select group of billion plus club in freight movement, the focus has once again shifted on the prestigious DFC. The project will enhance the freight carrying capacity of railways by manifold leading to incremental gains, apart from freeing the existing lines on congestion. The project cost of eastern and western DFC is currently estimated at ₹95,836 crores, which also includes cost of land. Western DFC is funded

by loan from Japan International Cooperation Agency. While part of Eastern DFC, of Ludhiana–Khurja–Dadri–Kanpur–Mughalsarai section is funded by World Bank.

The DFC will not only decongest the existing lines, which will in turn also help in increasing the speed of passenger trains, leading in to other benefits. The DFC though will run almost parallel with the existing lines but will not be used for moving passengers. Its aim is to provide multi-modal system for moving goods. The plan to construct DFCs across the country marks a strategic inflexion point in the history of IR that has essentially run mixed traffic across its network. Once completed, the DFCs will enable IR to improve its customer orientation and meet market needs more effectively. Creation of rail infrastructure on such a scale—unprecedented in independent India—is also expected to drive the establishment of industrial corridors and logistic parks along its alignment.

Over two hundred locomotives with 9000 horse power (HP) are being bought from Japan that will run on DFC. The carrying capacity of rakes will increase from the current 300 tonnes to over 12,000 tonnes. Even the length of the train will increase to 1500 m.

Length distribution of the corridor indicates that Rajasthan (39 per cent) and Gujarat (38 per cent) together constitute 77 per cent of the total length of the alignment of freight corridor, followed by Haryana and Maharashtra 10 per cent each and Uttar Pradesh and National Capital Region of Delhi 1.5 per cent of total length each. This DFC envisages a high-speed connectivity for High Axle Load Wagons (25 tonnes) of double stacked container trains supported by high power locomotives. The Delhi–Mumbai leg of the Golden Quadrilateral National Highway also runs almost parallel to the freight corridor. This corridor will be equipped with an array of infrastructure facilities such as power facilities, rail connectivity to ports en route, etc. Approximately, 180 million people, 14 per cent of the population, will be benefitted by the corridor's development.

This project incorporates nine mega industrial zones of about 200–250 sq. km, high speed freight line, three ports, and six air ports; a six-lane intersection-free expressway connecting the country's political and financial capitals and also a 4000 MW power plant. Several industrial estates and clusters, industrial hubs, with top-of-the-line infrastructure would be developed along this corridor to attract more foreign investment. Funds for the projects will be from the Indian government, Japanese loans, and investment by Japanese firms and through Japan depository receipts issued by the Indian companies.

This high-speed connectivity between Delhi and Mumbai offers immense opportunities for development of an industrial corridor along the alignment of the connecting infrastructure. A band of 150 km (influence region) has been chosen on both sides of the freight corridor to be developed as the Delhi–Mumbai industrial corridor. The vision for DMIC is to create strong economic base in this band with globally competitive environment and state-of-the-art infrastructure to activate local commerce, enhance foreign investments, real-estate investments and attain sustainable development. In addition to the influence region, DMIC would also include development of requisite feeder rail/road connectivity to hinterland/markets and select ports along the western coast.

Delhi–Mumbai industrial corridor is being conceived as a model industrial corridor of international standards with emphasis on expanding the manufacturing and services base and develop DMIC as the 'global manufacturing and trading hub'. The government is considering this ambitious project to establish, promote and facilitate Delhi–Mumbai

industrial corridor to augment and create social and physical infrastructure on the route which is world class and will help spurring economic growth of the region.

Integrated Investment Regions and Industrial Areas (IAs) have been identified within the corridor to provide transparent and investment friendly facility regimes. These regions are proposed to be self-sustained industrial townships with world-class infrastructure, road and rail connectivity for freight movement to and from ports and logistics hubs, served by domestic/ international air connectivity, reliable power, quality social infrastructure, and provide a globally competitive environment conducive for setting up businesses. An Investment Region would be a specifically delineated industrial region with a minimum area of over 200 sq. km (20,000 hectares), while an IAs would be developed with a minimum area of over 100 sq. km (10,000 hectares).

As mentioned earlier, it is very ambitious project and once completed it will redefine freight movement, provide multipliers to increase growth, create employment opportunities and also the beginning of making IR a basis for all round development with an efficient mode of state-of-the-art transportation facilities.

Despite these recent initiatives, there are still other issues which IR needs to address over a certain period of time.

Railways have to become a part of a holistic 'national logistic policy' covering all modes of transport with linkages and complementarities between rail, road and sea. Expansion of rail network should keep the economic rather the political perspective. The government should expedite establishing rail links especially in the NE states and also with neighbouring countries. This would provide for better links and relations in and around the region.

It should also review the practice of having a separate budget for railways, a practice initiated by the British rule since 1924. Budgetary allocation made to defense, oil sector are much more than allocations made to railways. By the same token, there should also be a separate budget for defense. Or is it that IR is more important than defense. These are some aspects which the government should examine.

To conclude, railways, ports and roads have to become a part of multi modal logistics in India, for achieving efficiency, cut down time and costs, in transportation of goods from the producers to the ultimate user both in India and overseas.