

Massive Infra Investment to Boost Steel Consumption

Sanjay Sengupta

Steel is a versatile material

that possesses multitude and preferred properties with environments friendly characteristics which has enabled it to occupy the foremost place among materials used in construction / infrastructural activities : Perception of end-users about the strength of steel and its eco-friendliness has increased the use of steel products in construction / infrastructure sectors over decades through cost-effective designs and detailing of the projects. Though steel has relatively high strength to weight ration and steel products are prone to corrosion, the alternative materials have not been able to make a significant dent on its volume of its consumption in construction / infrastructure sectors. Infrastructure may be defined as a

set of assets which underline the society and its economic activities specially the railways, roads, bridges, power generation and its distribution, ports, irrigation, water treatment plants, educational institutions, commercial and residential buildings, hospitals, shopping malls, sports stadia and other activities that benefit the society.

A renowned economist has defined the role of infrastructure in an economy as an umbrella for many activities referred to as 'Social Overhead Capital'. The infrastructure sector has one of the strongest linkages with the various segments of the economy of a country and, therefore, has a strong multiplier effect.

The path to the economic growth of a developing country line India is very closely linked to the development of its physical infrastructure. Any developing nation need to attract capital to ensure its economic growth and to attract such capital, basic infrastructure has to be strong enough.

Long ago, IISI, Brussels (now World Steel Association) had observed that inadequate infrastructure in a country holds back its economic growth and acts as a deterrent to its industry's competitiveness, harming the quality of life of its people.

Those countries that have neglected their infrastructure development are falling behind their competitors where facilities are better. IISI observed that infrastructure is not only an input to the production process but also a public good. There is social benefit in having road and railway network, sewerages, water treatment plants, hospitals, housing, educational institutions that contribute to social well being.

IISI, Brussels had also observed that infrastructure development good for a country for its economy and in the generation of steel demand. The steel industry's interest coincides with national interest on this issue. The steel industry has, therefore, an enlightened interest in promoting the need for increased spending for infrastructure development.

Why Steel is a Preferred Material for Use in Infrastructure Projects ?

Steel has been accepted as a preferred material for use in infrastructure projects due to the following reasons :

- Easy fabrication and erection facility.
- Speedy application, better durability and aesthetics.
- Superior strength, toughness and better ductility.
- Greater flexibility for maintenance, change of use and replacement whenever required.
- High strength to weight ratio.\
- Improved durability, resistance to corrosion, fatigue, fire and earthquake.
- Lower life cycle cost.
- Improved safety in construction and operation at site without causing disturbance in the locality.

- Easy transportation facility.

Sectors / Segments where Use of Steel is Vital

Various infrastructure sectors where steel plays a vital role are mentioned below :

- Agriculture and agro-based industries.
- Housing including multi-storied buildings, high rise office premises etc.
- Educational, sports stadia and recreational facilities.
- **Defense** : Its roads, bridges, naval yards, airstrips etc.
- Health organizations.
- Power – its generation, transmission and distribution.
- Non-conventional energy.
- Community development.
- Roads and railway transportation.
- Ports and shipyards
- **Irrigation** : Dams for flood control
- Telecommunication

Criteria for Selection of Steel Products for Infrastructure Projects

The criteria for selection of steel products are usually based on the following factors and may vary according to end-use :

- Strength
- Brittleness
- Resistance against corrosion, abrasion etc.
- Weld ability and durability
- Ductility
- Resistance against fatigue
- Fire resistance
- Weather resistance
- Earthquake resistance

Major Applications of Steel Products in Infrastructure Projects

Major applications of various steel products in infrastructure projects are mention in Table-1.

Promotion of Steel Consumption in Infrastructure Projects

Steel experts and economics has made the following prescription for promotion of steel consumption in the infrastructure projects.

- To boost investment by the public and private sectors
- Quick sanction of projects, timely release of funds and time-bound implementation of infrastructure projects to avoid time and cost over runs.

TABLE – 1 : MAJOR APPLICATIONS OF VARIOUS STEEL PRODUCTS IN INFRASTRUCTURE PROJECTS

| Steel Products | Major Application in Infrastructure Projects |
|--|--|
| Wires Drawn from Wire & Rods | Wire for Reinforcements, Netting, Fencing etc. |
| Wire Rods | Fasteners, Reinforcements, Concrete Sleepers for Railway, House Buildings Irrigation, Dams and Stay-ware Bridges |
| Re-bars | Buildings, Warehouse, LPG/LNG Storage Foundation Work etc. |
| High Quality Bars & Rods | Structural Ports |
| TMT Bars | Concrete Reinforcement in High-rise Building Bridges, Construction Exposed to Marine or Underground Environment – Underground Mine Support, Slope Stabilisation in Hills and Construction in Seismic Zones. |
| Sections and High Strength Structural Steels | Building Construction, Bridges, Ships and Vessels, Railways and Transport Industry |
| Universal Beams, Wide Beams, H-Beams | Building Columns, Structural Flange Members, Frames, Girders and Flyovers etc. |
| Heavy Beams | Offshore Construction, High-rise Buildings, Truss etc. |
| Hollow Sections | Buildings |
| Rail & Railway Material | Railways, Merry-go-Round Times for Industrial Units |
| Tubular Products | Water, Steam, Slurry Pipelines, High Pressure Hydraulic System, Structural Construction, Pipes Pylons etc. |
| Plates | Construction of Steel Structures, Industrial Machinery, Port Construction, Oil and Gas Drilling Rigs, Line Pipes, LPG/LNG Storage Tanks, Ship Building and Shipyards, Nudear Reactors, Hydro Power Plants etc. |
| Steel Products | Major Applications in Infrastructure Projects |
| H.R. Coils, Sheets and Strips | Structural Materials, Welded Pipes, Hamilton Pales |
| CR Sheets | Industrial Construction Tanks and Containers, Railways |
| Galvanised Sheets | Roofings, Side-claddings, Fencing, Factory Sheds, Rly. Platforms |
| Organic Coated Sheets | Buildings, Interior Decorations, Roofs, Paneling |
| Closed Structural | Structural Fabrication Like Space Frame, Industrial Sheds |

- To take up infrastructure projects only after salving land acquisition problem and after obtaining environmental clearance.
- Accelerating the implementation of infrastructure projects in sectors like power, road and railway transportation, ports, irrigation and housing (in semi-urban and rural areas)
- Allocation of larger funds for infrastructural development in rural areas.
- Steel industry to ensure timely availability of steel materials in exact size and according to the quality and specification as per the design and requirement of the projects.

Infrastructure has Highest Share in Construction Sector

Construction sector accounts for about 5 percent of India's total finished steel consumption. According to experts, the construction sector in India consists of the following :

- Infrastructure - 54%
- Industrial Expansion – 36%
- Residential and Commercial – 10%

Total – 100%

Norms of Steel Consumption in Various Infrastructure Projects

TABLE-2 : SUB-SECTORS OF INFRASTRUCTURE WHERE STEEL HAS MAJOR USE

| Sub-Sector | Where Steel has Major Use |
|--------------------------------------|--|
| Transport | Roads, Bridges, Flyovers, Ports and Shipyards, Inland Waterways, Airports, Railway Tracks and Bridges, Railway Coaches and Wagons, Urban Public Transport etc. |
| Energy | Power Generation and Distribution, Oil and Gas Pipelines, LPG/LNG Storage Facility, Oil Drilling Platforms |
| Water and Sanitation | Solid Water Management, Water Treatment Plants and Pipelines, Overhead Tanks |
| Communication | Telecommunication |
| Commercial and Social Infrastructure | Educational Institutions, Hospitals, SEZs, Shopping Malls, Fertilizers, Cold Storage, Silos etc. |

Steel plays a vital role in various infrastructure projects consumption of steel products in infrastructure projects may vary marginally in different type of projects depending on the design and use of higher

grades of steel and the degree of engineering skill available at the time of actual operation of the site of the project. The volume of steel consumption in various infrastructure projects are shown in Table-3.

TABLE-3 : NORMS OF STEEL CONSUMPTION IN INFRASTRUCTURE PROJECTS

| PROJECT | STEEL CONSUMPTION | REMARKS |
|--|---|---|
| Roads (National Highway Development Programme) | 100 Tonnes for Every Kilometer of Road | Additional Demand for Flyovers / Elevated Roads |
| Railways | 300 Tonnes for a Double Line Per Km 30 Tonnes Per Wagon | Additional Demand for Railway Bridges |
| Power Projects | 33,000 Kg for a 500MW Capacity Plant | Additional Demand for CRNO/CRGO Steel |
| Oil & Gas Well Platform | 200 Tonnes of Structural Steel Per Well Platform | |
| Oil & Gas Process Platform | 10,000 Tonnes of Per Platform | |
| One 6-Mtpy Capacity Petroleum Refinery | 85,000 Tonnes of Steel Materials | |
| An One-million Tonne Capacity Steel Plant | 50,000 Tonnes of Steel Materials | |

Source : JPC Bulletin – December 2012

Reasons Behind Poor Infrastructure Growth in India

The major reasons for the poor state of infrastructure in India may be summed up as follows:

- **Power** : Cost of power is almost comparable but its supply is erratic and unreliable low plant factor. Power shortage often leads to the use of generators which enhances cost.

- **Energy** : 27% T&D losses, 14% peaking deficit and logistics cost impacted by low grade infrastructure.

- **Roads** : Poor roads and increase freight. Only 20% of National Highways have 4 lanes, 50% are 2 lanes and 30% are single lane. State

roads in some part of the country are not properly maintained and become unusable during the monsoon.

- **Logistics** : Average speed of trucks and containers in India is 40 Km/h as against 60 Km/h China and over 90 Km/h in the U.S. This leads to higher logistics cost.

- **Ports** : Average turnout in the Indian ports in 84 hours as against 10 hours in Thailand and 17 hours in Sri Lanka. Besides Indian ports suffers from poor connectivity, inadequate berths and draft facilities.

- **Delay in Project Sanction** : The average time taken for forest and environmental clearance and solution of land acquisition problems in India is about three years. Its results in delay in execution of 60% of power and 40% of road projects.

Performance of Infrastructure Sector During the 11th Plan

A sectorwise analysis of the performance of Indian infrastructure sector during the 11th Plan period is presented below :

Power

Target investment in the power sector at Rs. 616,526 Crore – the highest among all sectors. The capacity addition during the 11th Plan period was 54,964 MW against a target of 78,700 MW – a shortfall of about 28%.



Thermal power has a share of about 66% in India's total power generation capacity. Coal is the major source of thermal power generation. NTPC is facing acute shortage of coal which is a constraint to additional power generation. While power generation capacity in India has increased in recent years, coal production has remained almost stagnant due to the delay in allocation of coal blocks.

Roads



The original investment proposed during the 11th Plan period was Rs. 311,816 crore. The actual investment was remarkably lower due to the shortfall in the award of road projects by NHAI during the first three years of plan period. Though the Government made serious efforts in later years to makeup the loss, an overall shortfall of 20% of the target investment could not be avoided. The ambitious target of building 20Km of highway per day failed as bank lending dried up.

Railways



The original investment for the Railways (including MRTS) during the 11th Plan was Rs. 258,001 crore. But the actual investment was much lower. While the Public Sector achieved about 75% of its target, the private sector could achieve only about 16%. The targets set for gauge conversion, modernization of railway stations as well as the work on dedicated freight corridors were awfully missed.

Ports



The original investment planned for the port sector was Rs. 73,941 crore during the 11th Plan. The actual investment was less than 50% of the target. The investment by the Private Sector was less than 60% of its original target as few PPP projects were awarded by the respective port trusts in the first two years of plan period.

Telecommunication



The original investment planned for this sector during the 11th Plan period was Rs. 267,001 crore. According to experts, the actual investment in this sector was higher by 34% of the target. This was due to a 60% higher investment by the Private Sector.

Water Supply & Sanitation



Original investment planned for this sector was Rs. 199,128 crore during the 11th plan period. The share of investment by the Public Sector was 97% and that for the Private Sector was 3%. Overall investment was hardly 40% of the target. Though the sector has an important role in uplifting the basic needs of the society, proper thrust by the Government on this area in lacking.

Airports



The original projected investment for this sector during the 11th Plan period was Rs. 34,378 crore. According to experts, the actual investment was about 17 percent higher than the original estimate as public sector investment was 39% higher and that of private sector was up by 7.1% of the original target. The Kolkata and Chennai airports were modernized but the projects for the development of the sector in the North Eastern region did not materialize.

Cost Overrun of Infrastructure Projects During 11th Plan

Minister of State for Statistics and Programme Implementation stated in the Lok Sabha that “Cost Overrun in the infrastructure projects at the end of 11th Plan was Rs. 521.5 billion.” The Minister also observed that the largest cost overrun happened in case of Delhi MRTS Phase II implementation by the Delhi Metro Rail Corporation at Rs. 102.18 billion during the 11th Five Year Plan.

Investment in Infrastructure & its Share in GDP

The importance of investment in the Infrastructure Sector for achieving a sustainable and inclusive growth of 9-10% of GDP was duly emphasized for the first time in the 11th Five Year Plan, wherein it was envisaged that investment in the development of physical infrastructure has to be increased from 5% of GDP during the 10th Plan period to about 9% of GDP by 2011-12 (terminal year of the 11th Plan). However, according to experts, investment in infrastructure sector as a percentage of GDP has been estimated to have reached about 6% of GDP during the 11th Five Year Plan.

Infrastructure Development During the 12th Five Year Plan

The UPA Government had earmarked an investment of USD 1 trillion (Rs. 55,50,000 crore during the 12th Five Year Plan (2012-13 to 2016-17) for the development of India's infrastructure sector which would ensure a share of 9.95% in the country's GDP. This was a big jump over the infrastructure development investment of 19,50,000 crore actually spent in infrastructure projects during the 11th Five Year Plan (2007-08 to 2011-12) of the total investment the Private Sector was expected to have a share of 50%.

According to Planning Commission sources, the following investment was planned for some major infrastructure sector during the 12th Five Year Plan period :

| SECTOR | INVESTMENT (RS. CRORE) |
|------------------------------|------------------------|
| Electricity | 1,499,914 |
| Roads & Bridges | 920,071 |
| Telecommunication | 884,204 |
| Railways | 456,743 |
| Irrigation (Incl. Watershed) | 430,103 |

The investment in the above sectors taken together accounts for 75.5% of total target investment during the 12th Five Year Plan. According to experts, there has been a massive shortfall of 79% in the target investment in infrastructure sector during the first two years of the 12th Plan – 2012-13 and 2013-14.

Private Sector Investment Slowdown

Private Sector investment in infrastructure sector has slowed down considerably between 2011 and 2013. According to World Bank the following were the investment by the Private Sector in infrastructure development between 2009-2013.

| YEAR | INVESTMENT BY PRIVATE SECTOR (USD MILLION) |
|------|--|
| 2009 | 37,329 |
| 2010 | 71,967 |
| 2011 | 40,916 |
| 2012 | 33,140 |
| 2013 | 13,519 |

A. M. Naik, Chairman, Larsen & Toubro, a company that is responsible for carrying out many infrastructure projects in India, has observed that there is no money with India's Corporate Sector and the PPP model will not work unless the Government gives guaranteed returns.

One of the biggest industrialist in India said that he is not able to put money in new infrastructure projects because of past experience, which has severally impacted his business.

Reserve Bank of India's Governor Raghuram Rajan has recently warned the Government of over dependence on banks for financing infrastructure projects and over borrowing by some corporates in the infrastructure sector.

The New NDA Government & Infrastructure Development

The new NDA Government which came to power at the centre in May, 2014 has dismantled the Planning Commission and set up a NITI AAYOG.

In the budget for 2015-16, India's Finance Minister has given a major thrust on infrastructure development. The Minister promised tax-free Bonds for infra projects and setting up of the NATIONAL INVESTMENT AND INFRASTRUCTURE FUND (NIFF) which will have an annual flow of Rs. 20,000 crore from the centre. This will enable the TRUST to raise debt and, in turn, invest as equity in infrastructure companies such as IRFC and NHB. The Minister also said that PSU : will raise capital expenditure by Rs. 80,444 crore to Rs. 317,889 crore in 2015-16. In fact, all told, investment in infrastructure will go up by Rs. 70,000 crore in 2015-16 over 2014-15 from Centre and CPSEs (Central Public Sector Enterprises).

The Union Budget has proposed a "PLUG-AND-PLAY" model for big ticket infra projects. This means that winner of the contract can start implementing the project immediately without waiting about all regulatory clearances and coal/gas linkages-

the biggest causes for many stilled projects.

The Government has promised to bear major part of the risks of PPP projects. Many projects under the PPP model have failed, leading to complaints from the private companies that they bear the burnt of setbacks while the Government is not under pressure to help resolve the difficulties.

In the budget, the Finance Minister has indicated massive investments in major infrastructure projects which are mentioned below :

Power : The budget has proposed setting up of five ULTRA MEGA POWER PROJECTS OF 400MW capacity each at an investment of Rs. 1 Lakh crore on "Plug and Play" Model. The power sector would also see on investment of US\$ 100 billion to create 1 Lakh MW of solar power and 60,000 MW of wind power.

The Government has approved policy framework for mixing costlier imported gas with cheaper domestic supplies to switch on 14,000 MW of gas-fired generation capacities which are now idling for want to fuel supply. The mixing of gas from different sources referred to as 'gas poding' – would reduce overall fuel cost and help generate 79 billion units at affordable cost.

Roads : The budget has proposed massive expansion / acceleration of road building by completing 1 Lakh km of highways already under construction and another 1 Lakh km of new projects which would boost demand for inputs including cement and steel. Awarding of National Highway Projects was 3,760 km in 2014-15 compared with 2,891 km in 2013-14.

The allocation on road sector has been increased by over 37% in 2015-16 at Rs. 45,751 crore over Rs. 33,305 crore in 2014-15. With muted private sector participation, rise in public funds could boost NH execution by around 5,600 km annually. Tax-free Bonds for roads and setting up of NIIF will provide additional funds.

Railways : In the Railway Budget for 2015-16, the Railway Minister asserted to fast track the already sanctioned works on 7,000 km of double, third and fourth lines and to commission 1,200 km at an investment of Rs. 8,681 crore in 2015-16 to de-conjest the clogged line. The Minister also sanctions 77 new projects covering 9,400 km of doubling / tripling works with electrification at a total cost of Rs. 96,182 crore to increase the capacity.

Announcing the beginning of a Five Year action plan to transform railways the Minister proposed a total investment of 8.56 lakh crore as detailed below :

| AREA OF INVESTMENT | INVESTMENT (RS. CRORE) |
|---|------------------------|
| Network De-congestion (Electrification, Doubling / Tripling etc. Dedicated Freight Corridors, Traffic Facilities) | 199,320 |
| National Projects (NE and Kashmir Connectivity Projects) | 39,000 |
| Network Expansion (Including Electrification) | 193,000 |
| Safety (Track Renewal, Bridge Works, Signaling, Telecom) | 127,000 |
| IT / Research | 5,000 |
| Rolling Stock (Locas, Coaches, Wagons : Production & Maintenance) | 102,000 |
| Passenger Amenities | 12,500 |
| High Speed Rail and Elevated Corridor | 65,000 |
| Station Redevelopment & Logistic Parks | 1,00,000 |
| Others | 13,200 |
| TOTAL | 856,020 |

The Railways have managed to get a funding of Rs. 1.5 Lakh crore from Life Insurance Corporation (LIC) for modernisation and upgradation of the next five years. An MoU has been signed between LIC and Railways by which investment will be made in Bonds issued by various railway entities such as IRFC

beginning fiscal 2015-16. There will be a five year moratorium on interest and loan repayment.

Ports : The Government has proposed to corporatize the Government run major ports. This will allow major ports to access private capital markets and provide them with greater



financial autonomy and lead to increased efficiency as it will result in quick decision – making and reduced regulatory hurdles. Availability of funds will improve through the establishment of NIIF and rationalization of taxes for Infrastructure Investment Trusts.

In 2015-16, the port traffic growth is expected a 7-8% over 2014-15, led by surge in coal and container traffic.

Slow Credit Flow Worry Govt.

The Government is worried over slow credit flow to large projects. According to the finance ministry between April, 2014 and January 2015, public sector banks have received a mere 88 proposals for projects worth Rs. 250 crore or more with proposed investment of 1,770 crore of these, a little under Rs. 25,000 crore have been sanctioned. The sectorwise position is shown in Table-4 for the

period April, 2014 to January 2015.

With infrastructure companies saddled with high levels of debt and some of them finding loan repayment difficult, banks are reluctant to sanction fresh loans. In any case, these companies are not bidding for new projects given their stressed finances.

Conclusion

The massive investment planned for India's infrastructure angers well for the country's industrial and economic development. The "Plug-and-Play" model is a praise worthy innovation.

Infrastructure development is closely linked with steel consumption. For 2014-15, the consumption of finished carbon steel is envisaged to be at about 70 Mt. The growth of "CORE SECTOR" representing the eight infrastructure industries may reach 4% in

2014-15 over 2.6% in 2013-14. Between April and December, 2014, consumption of long products at 28,458 Mt rose by 6.1% over the same period of the previous year, mainly due to higher demand from the infrastructure sector.

India's Corporate Sector is vocal about things not yet changing at the ground level. Few are buying the Governments promise of long-term funds coming from abroad. Industry watcher say that a lot of companies which had bid for some infrastructure projects are either quelling upto sell or just cutting their losses by paying the earnest money and getting away.

Even if a major part of the proposed investment infrastructure materializes the Indian steel industry will benefit immensely in future years.

TABLE - 4 : SECTORWISE NO. 07 PROJECTS, INVESTMENT, CREDIT SANCTIONED & DISBURSEMENT

| Sectors | No. of Projects | Investment (Rs.Cr.) | Credit Sanctioned (Rs.Cr.) | Disbursement (Rs.Cr.) |
|-------------------|-----------------|---------------------|----------------------------|-----------------------|
| Power | 26 | 39,242 | 9,069 | 934 |
| Real Estate | 24 | 30,805 | 4,740 | 555 |
| Telecom | 2 | 28,054 | 1,153 | 0 |
| Road | 13 | 13,620 | 3,317 | 0 |
| Iron & Steel | 4 | 7,056 | 300 | 40 |
| Ports | 4 | 6,294 | 874 | 4 |
| Oil & Natural Gas | 1 | 5,830 | 1,700 | 0 |
| Total* | 88 | 1,42,000 | 24,347 | 1,771 |

* Total includes other sectors like aviation, cement, chemicals etc.

N.B. : New Projects having investment of Rs. 250 crore or above (proposals received by Banks from April, 2014 to January 31, 2015)