

## **A Study on Transport Connectivity- Trend and Growth in India**

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### **ABSTRACT**

Connectivity (or permeability) refers to the directness of links and the density of connections in a transport network. As connectivity increases, travel distances decrease and route options increase, allowing more direct travel between destinations, creating a more accessible and resilient transportation system (TDM Transport Demand Management Encyclopedia, 2009). Connectivity affects the degree to which transportation networks such as streets, walking and cycling paths, connect people to their destinations (including intermediate destinations such as public transport services). Transportation system improvements can affect economic growth and productivity by changing access to markets and connectivity to intermodal terminals. Roads and transport, railways, ports, aviation and tele-communications are viewed as sinews of the economy and catalysts for social and economic change. They establish forward and backward linkages with the rest of the economy.

### **1. INTRODUCTON**

The transport system in India comprises distinct modes such as rail, road transport, coastal shipping, civil aviation, inland water transport and pipelines. Roads and transport, railways, ports, aviation and tele-communications are viewed as of the economy and catalysts for social and economic change. They establish forward and backward linkages with the rest of the economy. Connectivity (or permeability) refers to the directness of links and the density of connections in a transport network. As connectivity increases, travel distances decrease and route options increase, allowing more direct travel between destinations, creating a more accessible and resilient transportation system (TDM Transport Demand Management Encyclopaedia, 2009). Recognising the importance of roads and bridges in propelling the State economy, the Government of Tamil Nadu set an outlay of Rs.16,911 crore which constitutes a share of 8 per cent of the total outlay of Rs.21,1250 crore for the 12th Five Year Plan.

### **2. OBJECTIVES**

In this background this paper attempts make an analysis of development of transport in India with special reference to Tamil Nadu, the objectives of this paper are

- To bring out the trend and pattern of transport system in India.
- To analyze the growth of transport system in Tamil Nadu and measure taken by the government to improve the system.

## **TREND AND PATTERN OF TRANSPORT SYSTEM IN INDIA**

Transport plays a very vital role in the development of a country's economy; in determining overall productivity, quality of life of citizens, access to goods and services and the pattern for distribution of economic activity. The transport system in India comprises distinct modes such as rail, road transport, coastal shipping, civil aviation, inland water transport and pipelines.

### **ROADS AND ROAD TRANSPORT**

Along with railways, road transport caters to the bulk of domestic transport demand. In some areas, this is the only means of transport. Public investment over six decades has produced a massive road network. The total road length increased from about 400,000 km to 4.7 million km between 1951 and 2011. Surfaced roads increased from 157,000 km to around 2.5 million km. Road density in India is now nearly 1.42 km per sq km, which compares favourably with many countries. The share of the surfaced road length in the total road length also reflects healthy improvement. Surfaced road length accounted for 54 per cent of total road length in 2016, compared with 39 per cent in 1951. While overall road transport costs are low (relative to international experience) and have been stable, there has been a rapid increase in transport costs across relatively short distances across metropolitan areas and between cores and suburbs of the largest metropolitan areas. For instance, freight rates between Delhi and Chandigarh (a distance of 260 km) increased from Rs 1.2 per tonne km in 2001 to Rs 2.7 in 2011. The price escalation would have been to about Rs 2 per tonne km had it traced the WPI. Prices are even higher for shorter distances between cores and suburbs of metropolitan areas.

### **NATIONAL HIGHWAYS**

The length of National Highways (NH) reported a CAGR of 2.2 per cent between 1951 and 2011. NHDP has contributed largely towards improving the capacity and road quality of NHs. The length of NHs with two lanes increased from 25,395 km in 1996 to 41,518 km in 2012 and those with four lanes and above from 1,170 km to 17,774 km. During the same period, the combined network of State Highways and other PWD roads posted a sevenfold expansion in length with a CAGR of 3.2 percent.

### **RAILWAYS**

The Indian Railways had a modest beginning in 1853 when the first train journeyed from Mumbai to Thane, covering a distance of 34 km. In the next 50 years, the railway network expanded rapidly, and by 1900, the total length of the network (route kilometres) increased to 9,835 km. The rate of growth declined during the next 50 years, reaching 53,596 km in 1950-51. In the next 60 years, since the beginning of the Plan era, the route length increased to the 8th Plan onwards. The railways share increased from 50 per cent in the 1st Plan to a peak of 67 percent in the 3rd, with a drastic fall in the 4th and 5<sup>th</sup> Plan onwards, followed by a rise till the 7th. From the 8th Plan onwards, the share has constantly declined while expenditure on highways increased. The railways share stood at a dismal low of about 30 per cent in the 11th Plan.

## **CIVIL AVIATION**

Civil aviation arrived in India in 1911 when an aircraft flew from Allahabad to Naini, covering a short distance of 10 km. The two World Wars provided a stimulus to the sector. A number of airlines were established after World War II. However, significant development started only in 1953 when Indian Air lines and Air India were set up.

## **PORTS AND SHIPPING**

Global economic integration relies heavily upon efficient maritime transport due to its unparalleled physical capacity and ability to carry freight over long distances and at low costs. Seaborne trade represents more than 80 per cent of international trade. As high as about 95 per cent of India's trade volume (around 70 per cent in terms of value) is moved by sea. India's maritime sector comprises ports, shipping, ship building and ship repair, as well as inland water transport systems.

## **GROWTH OF TRANSPORT SYSTEM IN TAMILNADU**

Growth process can be led by a widening of market, which in turn may result from increased efficiency in transport and communication. Cheapening transport fuses markets; bringing additional buyers and sellers into contact with one another, increasing elasticity of demand and supply. Roads and transport, railways, ports, aviation and tele-communications are viewed as sinews of the economy and catalysts for social and economic change. They establish forward and backward linkages with the rest of the economy. Recognising the importance of roads and bridges in propelling the State economy, the Government of Tamil Nadu set an outlay of Rs.16,911 crore which constitutes a share of 8 per cent of the total outlay of Rs.21,1250 crore for the 12th Five Year Plan.

## **TRANSPORTATION AND COMMUNICATION SECTOR –TARGET OUTLINE**

- **Roads & highways:** Tamil Nadu to get 2000 km of 6-8 lane expressways, 5000km of 4 lane highways, and all highways being at least double-laned and with paved shoulders.
- **Ports:** Incremental capacity of ports in Tamil Nadu to exceed 150 million tonnes per annum including 15mn TEU of container capacity.
- **Railways:** All urban nodes with population of over 500,000 to be connected with high speed rail corridors for both freight and passenger traffic.
- **Airport:** Total capacity to handle 80million passengers per annum across all airports in the state, with Chennai alone accounting for half the capacity.

## **TWELFTH FIVE-YEAR PLAN OBJECTIVES ON ROAD AND COMMUNICATION**

- To increase the capacity, connectivity, efficiency and safety of highway network,
- To provide road infrastructure for equitable socio-economic development,
- To ensure equity and balance new road works are identified considering the density of road network per unit area and unit population,
- Industrial corridors to be established in the economically backward areas,
- To provide connectivity considering the heavy loaded vehicles plying in these
- Industrial areas, specially designed roads are required to be provided.
- Development of minor and intermediate ports along the East Coast through Private

- Public Participation (PPP) mode.

**ROAD NETWORK IN TAMIL NADU**

The road network improves connectivity and provides linkage between industries and agriculture. It incentivizes the directly productive activities and accelerates the process of economic development based on MORT & H Road Statistics, as of March 2012, the road density of Tamil Nadu is 177 km per 100 sq km which is more than Indian average of 148 km per 100sq km. Table below furnishes information on length of road by type.

**TABLE 1  
LENGTH OF ROADS-TAMIL NADU (KMS.)**

<b>TYPE OF ROAD</b>	<b>2011-12</b>	<b>2012-13</b>	<b>2013-14</b>	<b>%SHARE TO TOTAL</b>
National Highways	4974	4974	4974	2.02
State Highways	10764	10764	11594	4.07
Major District Roads	11247	11247	11289	4.57
Other District Roads	33263	33263	32492	13.17
Sugarcane Roads	1769	1769	1668	0.68
Panchayat Union & V.P.Roads	114556	128189	143071	57.97
Town Panchayat Roads	18554	18221	19304	7.82
Municipality Roads**	12703	12703	12703	5.15
Corporation Roads**	9694	9694	9694	3.93

Source: Highways Department, Chennai, Govt. of Tamil Nadu

As shown in the Table above, structural changes in the types of road constructed are noticed. The State Highways Roads has a 8 percent increase in the total length of roads in 2013-14, which is essentially a conversion of Major District Roads in to its fold. As far as Major District Roads are concerned, the increase in its length is the result of the up gradation of Other District Roads. On the other hand, other District Roads shows a declining trend as Other District Roads joining the Major District Roads fold because of high traffic and other strategic reasons. The rise in the Panchayat Union and Village Panchayat roads from 128189 Kms to 143071 Kms, is 12 percent. It bears a testimony to the growing network of roads in the interior villages of Tamil Nadu. Thus rural connectivity is ensured. Such a penetration of roads to rural areas in the State reflects the realization of the goal of Provision of Urban Amenities in Rural Areas (PURA).

**CENTRAL ROAD FUND SCHEMES**

**CENTRALLY-SPONSORED SCHEME**

The corpus of the Central Road Fund sourced it from the 50 percent cess levied on High Speed Diesel and 100 percent cess on Petrol, out of this 30 percent of funds provides for development and maintenance of State roads. The said fund finances the centrally Sponsored Schemes under

- Revamped Central Road Fund Scheme
- The Economic Importance Scheme and
- The Inter State Connectivity Scheme for the betterment of National Highways and State Roads

## **REVAMPED CENTRAL ROAD FUND SCHEME**

During 2011-12, 29 road works to a length of 369.15 Km and 7 bridge works costing Rs.232.45 crore were taken up as spill over. Out of this, 18 road works to a length of 244.08 Km and 5 bridge works were completed at a cost of Rs.147.45 crore during 2011-12.

During 2013-14, 15 road works to a length of 186.52 Km costing Rs.118.50 crore were taken up as spill over. Further the Ministry of Road Transport and Highways has sanctioned 31 road works to a length of 306.68 Km and 1 bridge work costing Rs.255 crore as new works. Out of this, 20 road works to a length of 179.97 Km have been completed at a cost of Rs.163.92 crore during 2013-14.

## **INTER STATE CONNECTIVITY SCHEME**

- During 2011-12, 2 road works to a length of 20 Km were taken up at a cost of Rs.9.16crore as spill over and these works were completed with an expenditure of Rs.8.68crore.
- No sanction was received under this scheme during 2012-13.
- MORT&H has sanctioned 5 road works to a length of 44.89 Km costing Rs.39.03 crore under ISC scheme 2013-14. Out of this, 2 works have been completed and 3 works are in progress.

## **DEVELOPING RURAL ROADS UNDER BHARAT NIRMAN SCHEME**

Up-gradation of rural roads that forms a part of the core network roads is the prime focus in the rural-based Bharat Nirman Scheme. Phase-II of this scheme was under execution in 2011-2 and 2012-13, had fruited well. It witnessed formation of sizable road as well as building projects. During 2012-13, Ministry of Rural Development has sanctioned up gradation of 330 Other District Road works to a length of 1062.55 Km executed by National Highways wing at a cost of Rs.278.54 crore. Out of this, 228 Other District Road works to length of 662.36 Km were completed at a cost of Rs.238.79 crore up to 2013-14.

## **NABARD-ASSISTED SCHEMES**

The contributions of the NABARD-Assisted Scheme such as construction of bridges, improvements of roads, construction of Railway Over Bridges, Railway under Bridges and bypasses are significant. The below table provides a bird's eye view of various works taken up under this scheme.

**TABLE 2**  
**NABARD ASSISTED SCHEMES - TAMIL NADU**

Scheme	Objective	Progress
1. Improvement to MDRs and ODRs	Improving and strengthening of MDRs and ODRs	Under this scheme during 2011-12, 268.10 km. of roads at a cost of Rs.96.86 Crore has been taken up for execution. During 2011-12, 219.10 km. length of roads were completed incurring an expenditure of Rs.74.73 Crore. Under this scheme during 2012-13, totally 482.72 km. length of roads at a cost of Rs.224.32 Crore has been taken up for execution. During 2012-13, 49 km. length of roads were completed incurring an expenditure of Rs.22.84 Crore. Under this scheme during 2013-14, totally 433.72 km. length of roads at a cost of Rs.201.17 Crore has been taken up for execution. During 2013-14, 422.42 km. length of roads were completed incurring an expenditure of Rs.191.60Crore. During 2014-15, an allotment of Rs.100 crore has been made under this head.
2. Construction of River Bridges in Government and Panchayat Union Roads	Bridgeworks	Under this scheme during 2011-12, totally 199 bridges at a cost of Rs.419.88Crore has been taken up for execution. During 2011-12, 67 bridges were completed incurring an expenditure of Rs.142.67 Crore. Under this scheme during 2012-13, totally 250 bridges at a cost of Rs.518.52 Crore has been taken up for execution. 64 bridges were completed incurring an expenditure of Rs.137.18 Crore. Under this scheme during 2013-14, totally 309 bridges at a cost of Rs.626.25 Crore has been taken up for execution. During 2013-14, 104 bridges were completed incurring an expenditure of Rs.232.60Crore. During 2014-15, an allotment of Rs.265 crore has been made under this head.
3. Rural Road Scheme	Panchayat Union Roads connecting villages having a population of 500 – 1000.	Under this scheme during 2011-12, 5 bridges at a cost of Rs.7.07 Crorehas been taken up for execution. During 2011-12, 3 bridges were completed incurring an expenditure of Rs.3.66 Crore. Under this scheme during 2012-13, 2 bridges at a cost of Rs.3.27 Crore has been taken up for execution. 1 bridge was completed incurring an expenditure of Rs.0.81 Crore. Under this scheme during 2013-14, 1 bridge at a cost of Rs.1.43 Crore has been taken up for execution and due to involvement of IAF land alienation this work has been carried over to the next year and will be completed after land transfer from IAF. During 2014-15, an allotment of Rs.1.53 crore has been made under this head.

Source: Highways Department, Chennai, Govt. of Tamil Nadu

### 3. CONCLUSION

The implications for an integrated transport policy is to address critical questions on capacity augmentation and the types and magnitudes of transport investments required to support rapid economic growth to achieve significant improvement in productivity and efficiency, it is imperative that future planning of India’s transport network is aimed at development of multi-model transport, both within the country and export- import trade.

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