

## Developing India's Surface Transport Capability: The Case of Road Infrastructure (ARI)

*Rajeev Anantaram*\*

**Theme:** The Government of India is making concerted efforts to reduce transport bottlenecks, particularly on roads. This ARI discusses the new policy initiatives formulated as part of an evolving regulatory regime, particularly those intended to encourage greater private sector participation and foreign direct investment.

**Summary:** This ARI deals, first, with the evolution of infrastructure policy in conjunction with broader socio-economic objectives and the progress to date. Secondly, it provides a statistical overview of the state of the roads in India by category and planned growth during the remainder of the 11th (2007-12) and 12th (2012-17) Plans. Third, it discusses the new policy initiatives formulated as part of an evolving regulatory regime, particularly those intended to encourage greater private-sector participation and FDI.

**Keywords:** India, infrastructure, roads, policy, public investment, private sector participation.

### Analysis:

'America did not build the roads; the roads built America'  
(John F. Kennedy, Presidential Address, 1960)

As with other infrastructure sub-sectors, India's overall road network lags seriously behind those of other developing countries of comparable economic size, in terms of both accessibility and quality. An additionally discomfiting characteristic of the road sector in India is its enormous variability in connectivity and quality at the provincial level, which in turn contributes to uneven development and often exacerbates the prevailing urban-rural divide. It is heartening to note, however, that the government has responded to the challenge and is making concerted efforts to reduce transport bottlenecks, particularly on roads. The challenge is daunting, but it is clear a start has been made and that, as with other sub-sectors, there is multi-party agreement that the quality of roads needs to be improved.

The National Democratic Alliance (NDA) that governed India between 1998 and 2004 can be credited with providing the initial thrust to the road development programme through aggressive ventures like the Golden Quadrilateral, that was designed to link India's four

---

\* Senior Fellow, Indian Council for Research on International Economic Relations (ICRIER), New Delhi.

major cities (Mumbai, New Delhi, Kolkata and Chennai) through modern expressways and also by enhancing the scope of the National Highway Authority of India (NHAI) to improve urban connectivity in general. A prominent facet of the 'new' road policy was the emphasis on private sector involvement mainly in the form of Public-Private Partnerships (PPP). The United Progressive Alliance (UPA) government that assumed office in 2004 and is currently in its second term has provided policy continuity over the past six years and is substantially enlarging the scope of the road development programme.

As part of the government's broader agenda, road construction is being closely linked to social policy and has resulted in a change of vision from being predominantly urban-focused to being more spatially inclusive. The infrastructure development programmes set in motion during the past decade have been particularly useful in providing employment and sustenance to economically deprived families especially in rural areas, which have traditionally been cut off from the economic mainstream.

This ARI focuses on the road sector in India and is organized as follows. The first section deals with the evolution of infrastructure policy in conjunction with broader socio-economic objectives and the progress achieved to date. The second section provides a statistical overview of the state of India's roads by category and planned growth during the remainder of the 11th (2007-12) and 12th (2012-17) Plans. The third section discusses the new policy initiatives formulated as part of an evolving regulatory regime, particularly those intended to encourage greater private-sector participation and foreign direct investment (FDI). The final section presents some conclusions.

#### *The Evolution of the Policy Regime in India: Road Development as Part of a Larger Development Agenda*

Unlike the power sector, India possessed a fairly developed surface transport infrastructure at the time of independence from the UK in 1947. The road and rail networks were the world's second largest in length after those of the US. The initial motivation to develop a road network was linked to the UK's colonial policies, but it also facilitated the development of commercial activity on a pan-India basis, especially for the movement of raw materials from the hinterland to the urban manufacturing centres and even to overseas markets. The focus on heavy industry and the relative neglect of agriculture, coupled with inward looking capacities during the 1950s and 1960s led to a relatively more rapid expansion in power generation capacity, while the development of roads, railways and ports lagged in comparison. Until recently, most existing capacity – particularly in railway track length – had been installed prior to independence.

As regards distribution, roads were highly variable both in quality and in terms of surface density, continuing the trend seen prior to independence. While actual statistics are not available, the united Punjab province was generally considered to have the best roads in India. This was part of a larger British plan of treating the Punjab as a 'frontier' province, which in turn necessitated the ability to transport troops there as rapidly as possible. Punjab also had a highly developed canal irrigation system, which made it India's granary, a position that was consolidated during the green revolution of the mid 1960s. More importantly, the road network covered a significant portion of rural Punjab, much more so than in other states.

The focus on road development, as for the rest of the infrastructure sector, was inadequate. It was largely under the purview of the federal and state governments, who executed road building and maintenance programmes through state-level Public Works

departments that, in turn, sometimes employed private contractors. The process was characterised by endemic corruption at all levels which retarded the road development agenda, as private contractors maintained their margins by using sub-standard material.

Unlike the power sector, which was regulated by overarching legislation in the form of the Electricity Act, the road sector had no such defining ordinance, except that private entry to both construction and maintenance activities was extremely restricted. Despite the realisation that there were growing socio-economic disparities between urban and rural areas and that roads could potentially revitalise the economies of rural areas, little was done by way of concrete policy remediation and until recently public spending on roads was embarrassingly low.

The parlous state of roads became even more glaring after India embarked on a reform-driven, high-growth trajectory beginning in the early 1990s. China had initiated reforms in the late 1970s and had taken large strides in developing infrastructure. The comparisons between India and China were clearly unflattering to the former, especially when the positive impact of the virtuous cycle of infrastructure development on China's stupendous economic growth became clear.<sup>1</sup>

The UPA government with its commitment to reducing regional disparities and to rural invigoration is possibly the first in independent India that has explicitly adopted road construction as part of a broader social-uplift agenda. The *Bharat Nirman* ('Revitalise India') programme has a largely rural-India focused agenda that includes road development, increased public investment in agriculture by way of repairing and reconstructing irrigation systems, rejuvenation of agricultural extension programmes, improving rural sanitation, a much higher allocation for rural healthcare and education and watershed and forest management among others. These programmes are largely subsumed in the National Rural Employment Guarantee Scheme (NREGS) which assures one member of every rural family of 100 days employment per year. The NREGS scheme is the largest government-funded development scheme in operation anywhere in the world today. These schemes are designed to increase paid rural employment and have been a surprisingly strong consumption buffer to domestic industry during the economic downturn and slowdown of the past few years. The impact of the downturn, while not as severe in India as in some Western economies, has resulted in lowered consumption by urban consumers, especially in sectors with exposure to global trends. Increased rural spending has helped mitigate the impact of lower sales in urban areas.

The road development programme is thus not merely a scheme to enhance connectivity but provides direct economic opportunities to elements of the population who have been traditionally economically marginalised. The impact is potentially most significant on two sectors: manufacturing and value-added agricultural production, that have failed to take off thus far despite the considerable inherent advantages that India enjoys. This is in addition to the direct impact on sectors such as iron and steel, cement and other construction materials, which stand to benefit directly from increased government spending on infrastructure.

---

<sup>1</sup> China's economic growth since 1990 has been stimulated by exports and government spending, much of it on infrastructure. This has not only had feedback effects in the economy as regards the rapid movement of goods, but has stimulated the growth of sectors like steel and cement, of which China is the world's largest producer. The availability of world-class infrastructure, especially along China's eastern seaboard, has helped attract FDI in huge quantities, in a conscious decision by the government as part of a 'build and they will come' policy.

India missed out on an opportunity to develop a light engineering, labour-intensive mass-production-based manufacturing sector like the countries of East Asia and, more recently, China. Despite an emphasis on industrialisation in the days immediately following independence from the UK in 1947, labour-intensive manufacturing never took off in India. The initial emphasis was on heavy industry and by the time policy orientation shifted to include light industry in the late 1970s India had fallen too far behind East Asia to carve a niche for itself in this sector. The rapid growth of the service sector (services account for 55%-60% of India's GDP) temporarily created the impression that India might have leapfrogged the development chain, bypassing manufacturing *en route*. However, rapid manufacturing growth following industrial de-control failed to generate the expected employment and this led to a re-think about returning to the development of labour-intensive manufacturing, especially via small and medium-sized enterprises. The National Manufacturing Competitiveness Council (NMCC) submitted a report to the Prime Minister recommending steps to revitalise the manufacturing sector. The absence of infrastructure in all sub-sectors was identified as one of the most important factors holding back the development of manufacturing.<sup>2</sup> The report's underlying objective is to seek the means to restore annual manufacturing sector growth rates to 12% and the share of manufacturing in GDP to 25%-30% by 2020, from the current 9% and 16%, respectively.

Another sector whose growth has been way below its potential and which has a serious transformative potential both socially and economically is the agro-processing sector. This sector has been tragically neglected, despite India being among the top three producers of both fruits and vegetables. While the absence of infrastructure is not the sole reason, nearly 40% of domestically-produced fruits and vegetables perish before they can reach any market, either domestic or foreign. A sizeable proportion of these products are transported by road and so the emphasis on the development of rural roads is expected to significantly mitigate this problem and, in turn, tremendously boost the sector's development. This would provide considerable economic opportunities to the segment of India's population that is still connected with agriculture (approximately 55% of the labour force) besides attracting new investments aimed at adding value.

Rapid progress is underway in both these sectors, and the potential for transformation is considerable if a virtuous cycle driven by infrastructure development can be established. This strategy seems all the more useful from the point of view of India's human capital endowment, in that it is not predicated on the availability of a critical mass of highly-skilled individuals. Infrastructure development is a key factor for taking off in both these sectors.

#### *An Overview of the Indian Road Sector*

According to the *Annual Report of the Ministry of Road Transportation & Highways, Government of India* (2009), India's total road length was 3.3 million km, of which 70,548 km (2%) were 'national highways/expressways', 128,000 km (3.8%) 'state highways', 470,000 km (14.2%) 'major and other district roads' and 26,500,000 km (79%) 'village roads'. Understandably, 'rural roads' comprise the largest category, but with a few exceptions it is also the segment that needs attention most urgently, as discussed above.

---

<sup>2</sup> The report raised concerns not merely about roads but also about ports, power supplies and telecom penetration. The state of roads was seen as particularly relevant to the development of the export-oriented manufacturing sector. The time taken from factory to ports (or airports) was deemed to be way above the world average, while the limited handling capacity of ports and airports is an additional bottleneck, significantly increasing transaction costs for manufacturers. See National Manufacturing Competitiveness Council, *Report to the Prime Minister on New Manufacturing Policy* (2008) for details.

The total share of roads maintained by the Public Works Department (PWD) has decreased from 48.4% in 1951 to 34.4% in 2004, while the share of village-level roads (maintained by the village councils) has come down from 51.6% to 44.5% during the same period. Thus the share of publicly-maintained roads has declined from 100% to about 79% over 50 years. This declining share is offset by an increase in the share of 'urban & project roads' from 0% to 21% during the same period. This indicates greater private participation in road construction and maintenance.<sup>3</sup>

The move to encourage greater private-sector participation in roads is relatively recent. Private-sector (both domestic and foreign) participation rates are the highest in the National Highway Development Programme, where the incentive structure can be more easily identified and implemented. Statistics from the Department of Road Transportation and Highways (2009) indicate that a total of 86 concessions based on a Public-Private Partnership (PPP) model have been awarded to date, with 68 going to domestic firms and 18 to foreign firms. These covered a total length of 5,607 km, of which 980 km (17.4%) were completed. The total outlay for these projects was US\$ 9.4 billion. PPP projects were implemented entirely via Build-Operate-Transfer (BOT) Agreements, both toll and annuity based. 52 projects were toll based while 34 were annuity based. Most foreign firms participating in the NHDP programme did so through toll-based agreements.

'Externally-aided projects' are another important contributor to increasing road length in India. The latest government statistics indicate a total of 81 externally-funded projects that aim to add 4,017 km to India's road network, of which the World Bank funded a total of 30 projects corresponding to a road length of 1,465 km. Other donor-funded projects were carried out through the Asian Development Bank (44 projects, 2,402 km) and the Japanese Government (seven projects, 150 km).

Road construction has elicited considerable interest internationally despite the enormous complexity of India's bidding and regulatory processes and their internal variations. Despite the recent amendments to FDI legislation in India, whereby 100% equity ownership by foreign firms was allowed, the most common mode of foreign investment is through joint ventures (JV), perhaps driven by risk aversion, a desire to leverage the familiarity of the domestic partner with the prevailing regulatory and operating conditions or simply as a reflection of the involvement of many firms in India's road construction programme before the recent liberalisation policy was announced. Thus the fact that 54 of 68 companies involved (80%) were joint ventures as opposed to only 14 independent operations (wholly-owned companies) could mean that most companies operating in India have been in India since the time the road sector was first opened up to private investment.

Of the 68 firms with some foreign participation involved in the road industry in India, 25 (18 JVs and seven independent) were from Malaysia, followed by 11 (nine JVs and two independent) from China, five from Korea (all JVs) and five from Spain (all JVs). The prevailing trend is for increasing clarity in the formulation of bidding rules and regulatory requirements. It would be reasonable to expect foreign participation to increase in the days to come along with the number of wholly-owned infrastructure companies operating in India.

---

<sup>3</sup> Some urban roads are maintained by the PWD. However it is evident that there is greater private-sector participation in road construction and maintenance. Unfortunately, disaggregated statistics to validate this point are unavailable.

### *The Road Ahead*

The UPA government –elected to a second term in May 2009– has reaffirmed its programme of aggressive infrastructure development. The former Minister of Commerce, Kamal Nath, was moved to the specially created Ministry of Road Transport and Highways to further accelerate the process that had been set in motion in 1998. In late 2009, Mr Nath announced that from April 2010 20 km of all weather roads would be constructed per day. This target has been postponed for two months, so that the programme can be more clearly formulated, but the intention is obvious. The programme is to cover the rest of the 11th Five-year Plan (ending in 2012) and to continue into the 12th Plan.

The 11th plan envisions a total investment of US\$77.4 billion in roads, of which the public sector would contribute US\$51 billion and the private sector the rest. Thus, even within the existing framework, the private sector is expected to contribute approximately 33% of the total outlay. This share is expected to further increase during the 12<sup>th</sup> Plan, with the further liberalisation of existing regulations and the greater confidence fostered in the private sector (both domestic and foreign) as a result of the ‘demonstration effect’ from the successful completion of existing projects.<sup>4</sup> In the 11<sup>th</sup> Plan, National Highways received 47% of the outlay, followed by state roads with 41% and rural roads with approximately 12%.<sup>5</sup>

Despite considerable progress in road construction, both in terms of improving connectivity and the forward and backward linkages to the economy, much more needs to be done. The opportunities and challenges for the road sector in India in the days to come are as follows:

- Multi-partisan agreement to develop the road sector in India on a priority basis, including rural roads. This assures policy continuity regardless of the government in power.
- Rapid relinquishing by the state agencies as sole custodians of the sector, creating increasing space for private-sector participation. The government has liberalised sector rules considerably and actively encouraged private-sector participation.
- Vast undeveloped stretches, especially in the North-East –an area that was traditionally underdeveloped due to the terrain and distance from developed areas–. The recent ‘Look East’ policy offers considerable opportunities for private firms with the experience of road construction in mountainous terrain.
- The ready availability of manpower and strongly-developed backward linkages, especially in cement and steel, which means inputs can be locally sourced, reducing transaction costs.
- Liberalisation of labour laws, allowing the import of labour with specialised skills, needed for the execution of projects.<sup>6</sup>

<sup>4</sup> Exact outlay figures are not available for the 12<sup>th</sup> Plan, but as a rule of thumb the outlay would increase by 10%-15% per year.

<sup>5</sup> Some of the outlay for rural road development is obtained through the Prime Minister’s Rural Development Scheme. Thus the actual expenditure on developing rural roads could in effect be *higher* than officially budgeted by the Ministry for Road and Surface Transport.

<sup>6</sup> These laws are relatively recent and were enacted in response to demands by Chinese companies operating in the Indian infrastructure sector. Firms interested in availing themselves of these concessions should check the details first.

- The most daunting challenge remains land acquisition for projects, which varies from state to state. The planning commission has recently set up an advisory committee to come up with suggestions for a uniform country-wide set of rules.
- The domestic contractor lobby, consisting of private firms used to long years of dealing with the government bodies that allocated projects, is still capable of considerable disruption although its influence has waned in recent years.

**Conclusion:** The overall outlook for the road sector in India is positive due to the combination of circumstances discussed in this ARI. The less demanding opportunities have been taken and the states with forward-looking governments and/or with easier terrain have made significant progress in developing their surface transport infrastructures. While a lot more needs to be done in such states as well, the remaining road development agenda will be driven by the less-developed states, which may also have terrain that is more technologically challenging. Nevertheless, this is an opportunity for all the players involved.

*Rajeev Anantaram*

*Senior Fellow, Indian Council for Research on International Economic Relations (ICRIER),  
New Delhi*