

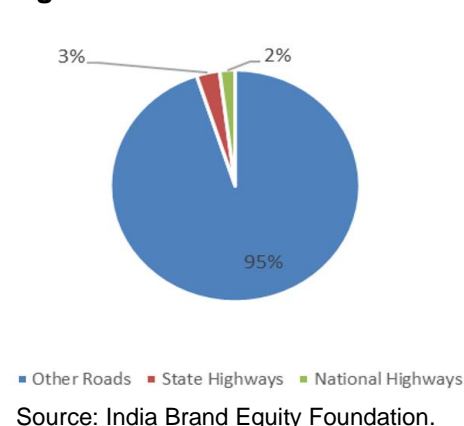
## SECTOR OVERVIEW

### A. Background

1. **Institutional framework.** In India, ownership of roads lies with the government. The central government is responsible for administration of national highways, and state governments are responsible for administration of state highways, major district roads, and village and other roads. The state public works departments and other state agencies maintain all the roads and highways of each state except the national highways, which are maintained by the National Highways Authority of India (NHAI).

2. **Road network in India.** India has the second-largest road network in the world (behind the United States), spanning 6.5 million kilometers (km). The road network is divided into three categories: (i) state highways totaling 176,818 km (3% of the total road network); (ii) national highways totaling 136,440 km (2%); and (iii) other roads (e.g., unpaved roads, dirt roads) totaling 6.2 million km (95%). National highways constitute a mere 2% of the road network but carried about 40% of the total road traffic in fiscal year (FY) 2020 (ended March 2020). The secondary system of roads comprises state roads and major district roads, which accounted for the remaining 60% of traffic and 98% of road length. Roads are the most common mode of transportation and account for about 86% of passenger traffic and close to 67% of freight traffic. Preference for road transport for freight movement is primarily on account of large capacity expansions carried out by fleet operators, flexibility, and door-to-door movement.<sup>1</sup>

**Figure 1: Road Network in India**



**Figure 2: Length Constructed (km)**



FY = fiscal year, km = kilometer.

Note: The FY of the Government of India and its agencies ends on 31 March. "FY" before a calendar year denotes the year in which the FY ends, e.g., FY2021 ends on 31 March 2021.

Source: India Brand Equity Foundation.

3. **National highway upgrade projects.** The NHAI launched the National Highways Development Project (NHDP) in December 2000 to develop the arterial national highway network. Before the NHDP was concluded in FY2019, 28,915 km had been completed, 10,574 km were under implementation, and 276 km were being awarded. Projects under the NHDP were awarded to private players on the basis of engineering, procurement, and construction (EPC); build–operate–transfer (BOT) with the ability to collect toll revenues with a concessionaire; and a BOT

<sup>1</sup> CRISIL Research. 2021. *Road and Highway Sector in India, Roads - Most Preferred Mode of Transport*. New Delhi.

hybrid annuity model (HAM), with fixed annuity payments provided to the concessionaire and tolling by the NHAI. In FY2019, when the NHDP was concluded, the remaining projects under implementation or award stage were included in the ongoing projects under Bharatmala Pariyojana (BMP), which envisages constructing 65,000 km of economic corridors, border and coastal roads, and expressways to boost the highway network. BMP aims to increase vehicular speeds by 20%–25% and reduce supply chain costs by 5%–6% by providing four-lane connectivity to 550 districts. The approved outlay for BMP phase 1 is about \$73.3 billion, which includes upgrading 34,800 km of the road network by 31 March 2022.<sup>2</sup> A total of 322 projects with a length of 13,500 km had been awarded under BMP as of 31 December 2020 and a total length of 2,500 km are under bidding as of end of FY2021.<sup>3</sup>

## B. Key Policies and Initiatives

4. **History of public–private partnerships.** The NHAI recognized early the importance of private sector partnership in developing roads and adopted the public–private partnership (PPP) framework in 2001. The main types of PPP contracts awarded are as follows:

- (i) EPC projects: The NHAI awards bids to private developers to construct a section of road and payments are made during the construction period.
- (ii) BOT annuity projects: The NHAI awards bids to private developers based on the lowest annuity quoted, with concessionaires recovering the annuity during the concession period while taking no traffic and toll risk.
- (iii) BOT toll road projects: Developers construct, operate, and maintain the road during the concession period. The revenue is based on the toll collected for the project after commissioning. Developers take the toll and traffic risk.

5. The initial PPP framework (adopted in 2001) was not successful as its risk allocation was inadequate, resulting in several projects facing issues midway during construction, which led to significant losses for private developers and nonperforming loans for banks. Key issues encountered by developers included the following: (i) gaps in the previous concession framework, (ii) inaccurate traffic forecasting, and (iii) poor construction and maintenance of roads. This resulted in reduced appetite among developers to construct and operate roads under the BOT model and slowed the award of road projects.

6. **Hybrid annuity model.** Introduced in 2016, the HAM is a mix of the traditional EPC and BOT (annuity) models whereby the concessionaire does not undertake any traffic risk. HAM projects are awarded to private developers for a 15-year concession period (excluding construction).<sup>4</sup> Concessionaire responsibility includes constructing and maintaining the road for the life of the concession. Of the project cost, 40% is paid by the NHAI during the construction period (linked to milestones), with the remaining 60% (adjusted for inflation) paid post commissioning by the NHAI as annuity in 30 unequal semiannual installments along with interest on the unpaid annuity balance. Subsequent amendments to the BOT model concession agreement were made by NHAI to increase private sector participation, mitigate risks, and drive competition.<sup>5</sup>

<sup>2</sup> While the award of works under the scheme is expected to be complete by FY2023, execution of the projects will take an additional 2 years.

<sup>3</sup> Government of India, MORTH. 2021. *Annual Report, 2020–2021*. New Delhi.

<sup>4</sup> Construction periods for HAM projects vary, although they are usually 12–36 months long depending on the complexity of the design.

<sup>5</sup> Some key amendments to the model concession agreement are as follows: (i) 40% of the total project cost is funded by the government as “construction support;” (ii) this construction support is to be disbursed in 10 equal installments

7. **Impact of coronavirus disease and government interventions.** The coronavirus disease (COVID-19) pandemic caused one of the most serious public health and economic crises faced by India. Nationwide lockdowns brought formal and informal economies to a grinding halt, pushing millions of households into poverty and substantially increasing income and wealth inequality. Construction activities across Indian roads stopped, with new contract awards delayed or canceled. The NHAI and the MORTH took steps to ease issues faced by developers and to mitigate the impact of COVID-19 on the roads sector, including (i) issuing time extensions of up to 3–6 months for all projects and relaxing milestone achievements, (ii) releasing payments monthly instead of making milestone-based payments, (iii) reducing performance security from 5% to 3%, (iv) calling for COVID-19 emergency loan facilities and a moratorium on loan repayment up to August 2020, and (v) extending the concession period for BOT toll operators because of toll suspension and restriction in movement during lockdowns. These initiatives made the recovery in the sector faster than expected. As a result of these policies, a total 13,000 km of roads were constructed during FY2021—an increase of 25% from FY2020.

8. **Increase in asset sales to help unlock tied-up capital.** Since 2017, the NHAI has been successfully monetizing its brownfield road assets through toll operate and transfer (TOT)-based PPP concessions and infrastructure investment trusts. TOT-based PPP concessions are a new PPP model introduced by the MORTH for the maintenance of roads. The model involves leasing operational national highways for periods up to 30 years to collect toll revenue in return for a one-time up-front payment to the government. A bundle of operational toll road projects with traffic and toll collection histories of 2–3 years are being monetized by the NHAI through the TOT model. Investing in the TOT model eliminates the construction risk for investors and frees up capital for the NHAI to invest in additional capacity creation. The NHAI has been able to raise about \$2.3 billion by monetizing 14,000 km of road through the TOT model and has further developed a project pipeline of about \$10.3 billion to be awarded through the TOT model.<sup>6</sup>

9. **Infrastructure investment trusts.** These trusts are expected to help unlock the tied-up capital by divesting stakes in the operational road assets, helping developers deleverage their balance sheets and recycle capital toward creating new assets, and also helping attract participation from foreign and domestic institutional investors. As per the regulations, infrastructure investment trusts are required to invest at least 80% of their funds in operational assets and ensure that 90% of the cash flows from operations are distributed to the investors. Several road assets have been monetized through infrastructure investment trusts by private sector players. The proceeds from monetization will be invested in new road projects, reducing the burden on the government.

## C. Investment Requirement and Role of Private Sector

10. **Role of private sector.** The investment requirement in national highways is expected to be \$155.9 billion during FY2022–FY2026, 2.3 times the amount invested in national highways during FY2017–FY2021. The investment would be mainly through the EPC and HAM routes. Significant investment would be required by the private sector to build capacity to achieve the increased investment targets in the form of increased funding requirements, personnel, and equipment. The total outstanding credit to the road sector from Indian banks was \$31.4 billion as

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of 4% each; (iii) project cost is linked to inflation; (iv) traffic risk is borne by the government, with developers receiving fixed annuities; (v) annuities will be linked to the marginal cost of funds based lending rate plus 3%, and inflation-linked operation payments are also paid by the NHAI (based on the amount quoted by the developer; and (vi) of the project land, 80% must be provided before the appointed date.

<sup>6</sup> S. Rey. 2021. 'We Saved Rs 30,000 Crore via Conciliation, FASTag Boosting Toll Receipts': NHAI Chairman Sukhbir Singh Sandhu. *Financial Express*. 13 April.

of 30 June 2021. This would need to increase to enhance the capacity of the private sector to implement the pipeline. This creates vast investment opportunities, including for international financial institutions, in augmenting the capacity of developers, helping to monetize assets, and freeing up the capital of developers or financing the construction of projects. Table 1 and Table 2 provide details of investments in the road sector and the total length awarded and constructed by NHAI.

**Table 1: Investment in the Road Sector**  
(\$ billion)

Item	Fiscal Year									
	2017	2018	2019	2020	2021	2022 <sup>a</sup>	2023 <sup>a</sup>	2024 <sup>a</sup>	2025 <sup>a</sup>	2026 <sup>a</sup>
National highways	7.7	12.1	12.1	13.5	16.1	21.4	30.5	30.5	30.5	30.5
State roads	14.1	12.8	16.3	17.6	16.3	24.2	24.2	24.2	24.2	24.2
Rural roads	2.1	2.3	3.1	2.9	3.0	2.9	2.9	2.9	2.9	2.9
<b>Total</b>	<b>23.9</b>	<b>27.2</b>	<b>31.5</b>	<b>34.0</b>	<b>35.5</b>	<b>48.4</b>	<b>57.5</b>	<b>57.5</b>	<b>57.5</b>	<b>57.5</b>

Notes:

1. The FY of the Government of India and its agencies ends on 31 March. "FY" before a calendar year denotes the year in which the FY ends, e.g., FY2021 ends on 31 March 2021.
2. Numbers may not sum precisely because of rounding.

<sup>a</sup> Projected.

Source: CRISIL Research. 2021. *Investments and Funding, Investment in Roads and Highways*. New Delhi.

**Table 2: Total Length Awarded and Constructed by the National Highways Authority of India**  
(km)

Item	Fiscal Year					2023 <sup>a</sup>	2024 <sup>a</sup>	2025 <sup>a</sup>
	2018	2019	2020	2021	2022 <sup>a</sup>			
Awarded	7,397	2,222	3,211	4,818	4,700	4,790	4,950	5,000
Constructed	3,070	3,308	3,979	4,175	4,400	4,600	4,800	4,400

<sup>a</sup> Projected.

Sources: CRISIL Research. 2021. *Forecasts - Total Length Constructed / Upgraded by NHAI*. New Delhi; and CRISIL Research. 2021. *Year-wise Break-up of Total Length Awarded by NHAI*. New Delhi.

11. The key players expected to play an important role in implementing the government's targets the road sector are presented in Table 3.

**Table 3: Key Road Developers**

Engineering, Procurement, and Construction Contractor	Roads Order Book <sup>a</sup> (\$ million)
G R Infraprojects Limited	2,329
Dilip Buildcon Limited	1,751
Gayatri Projects Limited	1,401
PNC Infratech Limited	1,488
Ashoka Buildcon Limited	838
Sadbhav Engineering Limited	946
IRB Infrastructure Developers Limited	903
Welspun Enterprises Limited	470
KNR Constructions Limited	487

<sup>a</sup> The amounts are as of the end of June 2021 and only pertain to orders in the road sector.

Sources: Quarter ending 30 June 2021 investor presentations.