



Infomerics Ratings

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## INDUSTRY OUTLOOK

### ROADS AND HIGHWAYS: TRENDS AND PROSPECTS

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## Introduction

“The link between infrastructure and development is not a once for all affair. It is a continuous process; and progress in development has to be preceded, accompanied and followed by progress in infrastructure, if we are to fulfill our declared objectives of self-accelerating process of economic development”. Dr.V.K.R.V.Rao. (1981): “Infrastructure and Economic Development”, Commerce Annual.

Transport networks spur economic growth during their creation, through their maintenance and upgradation and most importantly, by their use. India has the second largest road network in the world of about 63.86 lakh km [1] after U.S., encompassing primarily National Highways, Expressways, State Highways, Major District Roads, Other District Roads and Village Roads. Infrastructure development could be demand-driven (e.g. bypasses, bridges) or supply-driven (e.g. expressways). Over 64 per cent of commodities in the country are transported through roads, while 90 per cent of the total passenger traffic uses road network to commute.[2] Roads and bridges contribute 18 per cent (out of ₹57 lakh crore) in infrastructure investment done in India from 2013-19. The National Infrastructure Pipeline (NIP) is also expected to contribute 18 per cent (out of ₹111 lakh crore spanned over FY20-25) towards the same.[3]



The government has traditionally provided infrastructure because of the structural weaknesses of the laissez-faire mechanism and the natural features of many of the infrastructural services, such as, scale economies and high demand externalities. The dichotomy between social and private costs (and benefits) necessitates the selection of projects not justified on the basis of the conventional and extended cost-benefit techniques to avoid both the monopolistic abuses of infrastructure operations and the vagaries of the market. In India, the Finance Ministry recognises roads, new airports, ports, railways, irrigation, water supply, sanitation, sewerage system and telecommunications for several fiscal benefits.

Over the years, there has been growing private sector participation (especially, the private sector participation has increased manifold in recent years), with various models and modalities like public-private partnership (PPP); build-operate-transfer (BOT); engineering, procurement, and construction (EPC) etc. Some of the private players include IRB, GMR, HCC etc. A snapshot of the total road length (in kms) is given below (Table 1).

**Table 1: Total Road Length (in km)**

	<b>Mar'17</b>	<b>Mar'18</b>	<b>Mar'19</b>
<b>National Highways</b>	1,14,158	1,26,500	1,32,500
<b>State Highways</b>	1,75,036	1,86,908	1,86,528
<b>District Roads</b>	5,86,181	6,11,268	6,32,154
<b>Rural Roads</b>	41,66,576	44,09,582	45,35,511
<b>Urban Roads</b>	5,26,483	5,34,142	5,44,683
<b>Project Roads</b>	3,28,897	3,47,547	3,54,921
<b>Total</b>	<b>58,97,671</b>	<b>62,15,797</b>	<b>63,86,297</b>

Note - As per latest estimates available with MoRTH.

Source: Ministry of Road Transport & Highways (MoRTH) Annual Report, 2020-21.

## Strategic Priorities

The requirements of infrastructure in a globalizing world increased tremendously because of inadequate coverage and service level, poor service quality, institutional delinquencies and high administrative costs, insufficient financial and managerial resources with urban local bodies/parastatals, high revenue component due to wastage, pilferage, poor maintenance and cost recovery, unsustainable resource management practices, high investment needs and project costs and low priority accorded to certain basic services. The evolving pattern of level of basic infrastructure indicates accentuation of regional imbalances and associated spatially uneven pattern in infrastructure across States because of deeply ingrained historical, demographic, structural and institutional factors, infusion of large and continuous investment and divergent priority of different State Governments.

## National Highways

National Highways (NHs) form the economic backbone for our country and have facilitated development along their routes by creating positive externalities in the form of small restaurants nearby, creating opportunities for other small businesses and employment opportunities. The National Highways facilitate inter-city passenger and freight traffic across the country. As of 2020-21, the total length of national highways stood at 1,36,440 km. The net addition in the length of national highways over the years is given below (Table 2).

**Table 2: National Highways at a Glance**

<b>Year</b>	<b>Length (in km)</b>	<b>Net Addition (in km)</b>
2020 - 2021	1,36,440	3,445
2019 - 2020	1,32,995	495
2018 - 2019	1,32,500	6,000
2017 - 2018	1,26,500	12,342
2016 - 2017	1,14,158	13,147
2015 - 2016	1,01,011	3,181
2014 - 2015	97,830	6,543
2013 - 2014	91,287	

Source: Ministry of Road Transport & Highways (MoRTH) Annual Report, 2020-21.

The per day road construction for national highways has also been seeing an upward trend, except 2019-20 where it slipped marginally. However, it shot upwards to 37 km/day in the last fiscal (see Table 3) below.

**Table 3: Road Construction per day (in km)**

<b>Year</b>	<b>Award of NHs/ Road projects (1)</b>	<b>Construction of NHs/ Road projects (2)</b>	<b>Road construction per day in kms (3)</b>
2014-15	7,972	4,410	12
2015-16	10,098	6,061	17
2016-17	15,948	8,231	23
2017-18	17,054	9,829	27
2018-19	5,494	10,855	30
2019-20	8,900	10,200	28
2020-21*	5,100	4,000	37

\* Note: Data for column (1) & (2) is as on September 30, 2020. For column (3) it is till 31st March 2021.

Source: "Demand for Grants 2021-22 Analysis: Road Transport and Highways", PRS Legislative. Available at <https://prsindia.org/budgets/parliament/demand-for-grants-2021-22-analysis-road-transport-and-highways> and "MoRTH Achieves Record-breaking Milestone of Constructing 37 kilometers per day of Highways in FY 2020-21", PIB (2nd April 2021). Available at <https://pib.gov.in/PressReleasePage.aspx?PRID=1709145>

## Role of Banks and Financial Institutions

The major financing requirements in infrastructure are in terms of volume and maturity. Hence, debt constrains the development of infrastructural projects. Given the recalcitrance of a single bank/ financial institution in meeting all the credit requirements of a large project, syndication of lenders is usually resorted to. The issue of securing synergies in technology and infrastructure also provided an impetus to the rapid move to convergence.

It is desirable to orchestrate the flow of production cycle across a wide spectrum and provide an impetus to the growth process through increased private sector investment in infrastructure to broaden growth horizons. This can also be substantiated by the findings of a cross-country study.[4] However, in view of the heterogeneity and multi-dimensional nature of the infrastructural projects, the thrust of policy interventions in the realm of infrastructure has to consider the technique of management of the projects, raising of resources, typically different types of instruments and finance across projects on the basis of the gestation period and revenue streams requiring technical and financial innovations for the success of the projects.



Predictive, preventive and breakdown maintenance of infrastructural facilities necessitates planning for maintenance by design in the building of every asset and its constant monitoring and evaluation to optimise the use of scarce investible resources. Universal availability, building competitive strengths, eminent affordability, contestability, enforceable contracts, development of markets for long term debt instruments, efficiency and responsive delivery of infrastructural services through realistic pricing and transparent and nondiscriminatory rules constitute integral elements of the strategy to surmount obstacles and achieve high growth in India.

Accordingly, the RBI introduced guidelines relating to the financing of infrastructure projects, such as, criteria for infrastructure financing, types of financing, appraisal, regulatory structure, administrative arrangements, inter-institutional guarantees to accelerate credit to infrastructure for accelerating the flow of resources to the identified projects.

A thrust on the role of banks and financial institution in infrastructure financing could overcome the constraints of the development process. With the changing profile of infrastructural projects, the diverse modalities of infrastructure financing consistent with the market-oriented economy has highlighted the need for strategic interventions and internal resource generation by infrastructural projects. The incentives need to be changed, through commercial management, competition and stake holder involvement by the two approaches of the Concession and the Structured Financing Option (SFO) to planning, development, management and financing of infrastructure projects.

A Concession, which involves several legal and economic issues, including the organisation of government entities responsible for concession programmes and the adequacy of the broader legal and regulatory environment, is a legal arrangement in which a firm obtains from the Government the right to provide a particular service, which can be subsequently transferred to the Government in the case of longer-lived assets like roads, highways, airports, bridges, etc. [5]

The Concession Approach, where the concessionaire builds the project and is granted a franchise period during which the cost and return can be recovered, is thus well suited to projects that can charge users and leaves the Government with the option of imposing a tariff subsequent to the transfer. Concession schemes of the Build-Operate-Transfer (BOT) type for the development of infrastructure projects by the private sector attempt to meet the shortage in public resources and widespread disenchantment with the performance of state-owned utilities. However, such schemes are of limited applicability, where the required investment is relatively large in relation to the importance of the net cash flows generated by the infrastructure, after maintenance and operating costs.

They also refer to projects, whose revenues have a high degree of uncertainty. Trujillo, Jose A. et al (1997)[6] held that BOT schemes, defined by the concentration of all responsibilities (building, management and financing) in a unique private agent (or a joint venture of private agents) are inefficient in the case of projects characterised by high relative investment and high uncertainty.

More specifically, there are efficiency gains if financing is made through a neutral special purpose vehicle (SPV) sponsored by the public sector on behalf of the infrastructure users and payers to build and operate the asset. The SPV finances the construction of the asset/infrastructure facility through a combination of debt-equity, which is serviced from the revenue flows from the operation and maintenance of such facility. This risk-return mechanism allows the mitigation of the consequences of the uncertainty that typically characterizes both revenue flow (demand) and financial cost (interest rates and exchange rates).

Variants of the BOT approach of “project financing” to attract private participation in financing, construction and operation of infrastructure, where the value of efficiency gain from private participation can outweigh the extra cost of borrowing include (i) Build-Operate-Transfer (BOT) used in the context of a country’s highway network, energy, utility and port sectors provides private consortium with a concession to finance, build, operate and maintain a facility. Investors levy user-charges to compensate for costs of construction, debt servicing and operations during the life of the concession.

However, the facility reverts to the public authority on completion of the concession. (ii) Design-Build-Finance-Operate (DBFO) basis, where the private operator has the flexibility to design the project to minimise the maintenance costs, which could be 1 per cent of the total project, cost per annum. The cost is recovered by the annuity method, i.e., a fixed annual return accrues to the project operator in a pre-determined manner, irrespective of various other considerations; (iii) Build-Own-Operate-Transfer (BOOT) is broadly similar to BOT but ownership of project assets is more explicit and may also encompass underlying infrastructure. The project reverts to the government on completion of the stipulated period; (iv) Build-Transfer-Lease-Operate (BTLO) scheme, where the government provides the right-of-way on which the highways build and agreements require the promoter to pay a nominal rent or payment for use of the land; (v) Build-Operate-Lease-Transfer (BOLT) wherein the asset is owned by the creator and is subsequently leased. During the lease period, the owner receives lease rentals.

Other similar mechanisms include (a) Build-Own-Operate-Sell (BOOS), where the Government buys the infrastructure from the franchisee after the end of the franchisee period and Lease-Refurbish-Operate-Transfer (LROT).

In sum, all these variants of the basic approach stress the role of the government as a limited regulator in respect of safety, security, environment, etc. with flexibility to developers in respect of fixation and collection of tariff, framing of suitable manpower policies, planning of area development, operation and marketing of its facilities and finalisation of means of finance and structure of the project finance.



Structured Financing Option (SFO) basically implies non-recourse project specific financing. Securitization, which is an off-balance sheet financing technique, involves the removal of the lending institutions assets from the balance sheet and its funding by investors, who purchase a negotiable financial instrument evidencing this indebtedness without recourse to the original lender. This leads to securing of debt instrument by cash flows of the collateral value for the specified asset financed by the instrument to optimise total outlays and enables banks and financial institutions to avoid holding assets to maturity and leverage a given corpus into larger volumes of debt-financed periods over a period of time.

Corporate and public savings could be used with appropriate instruments and pension funds set up for inducing investment in long term instruments. Banks and financial institutions have to become instrumental in mobilising domestic savings with innovative instruments - with differentiation in price-period-hedge against inflation, legal statutory relaxation, exit options and deepening of secondary market to provide momentum to the growth process. The reforms relate to public acceptability of an infrastructure project and acceptability of cost recovery together with acceptability of private sector involvement, private sector entities with credibility, reinforcing the confidence in quality of service of the public and willingness to pay for such service.

Residual needs of infrastructure could be addressed to by involving social aspect requiring special skills for appraisal of the projects, funding of the project and monitoring of the implementation of the projects to curtail leakage, wastage and for ensuring quality of construction, pricing of tariff, and revenue management, proper coordination of various agencies.

The Expert Group [7] stressed the significance of commercialisation of infrastructural projects 'through a system of user charges, which bear a direct relation to the special benefits that the facility provides to the user' because of grossly inadequate internal resources of public infrastructure entities, dwindling Plan outlay for infrastructure, even shortfall in public investment vis-a-vis the target and the woefully inadequate response of the private sector. The failure of the private sector stems from levy of inadequate user charges, difficulty in assessing the long-term risks in financing by the private sector, non-transparency in project outsourcing processes and numerous time consuming clearances. Elements of the second-generation reforms germane to the infrastructure sector include emphasis on streamlining existing facilities, tariff reform for cost rationalisation, removal of subsidy and simultaneous action at the level of central and states to recover appropriate user charges in a wide range of infrastructural services to encourage private investment.

Until the mid-1980s, most developing countries relied on the public sector to finance and operate their infrastructure. But the gross inadequacy of efficient and sufficient infrastructure at reasonable cost induced most countries to examine the role of the private sector, both in taking over the operation of existing infrastructure enterprises and in financing new infrastructure projects. With a greater thrust on liberalization of markets, privatization of ownership and globalization of economy, there has been rapid expansion of private sector participation (PSP) in infrastructure projects, via the public private participation (PPP) models. Development of new BOT variants, viz., toll collection, annuity, etc. and model concession agreements further attracted private investment in infrastructure. While the private sector brings in efficiency in timely delivery, cost control and project management skills, the government would complement by playing the role of a facilitator, enabler and regulator.

Although, the potential benefits from private sector participation are clear, the challenges and risks are often alarming, which impacts private sector participation. Some of these could be summarized as lack of clarity in policies, high capital intensity, limited avenues of long-term finance, cost escalations and delays, long gestation periods, longer payback periods actual traffic/actual demand not in line with projections, low tariffs and absence of escalation clause, and absence of equitable and quick dispute resolution mechanisms.

All over the world, infrastructure is being promoted through various models of PPPs. The PPP model is ideal for the roads and railways sector and has been successful after the initial hiccups in roads, ports, and water supply and recently power. In case of roads two successful BOT models are already in place – the annuity model and the upfront/lump sum payment model. DBFO is another variant of BOT model being applied for six-laning of NHDP projects and the success of the project remains to be assessed.

While PPP promises to a convenient route, it has still to gain acceptance from all stakeholders. For greater coverage and securing faster improvement in the infrastructure, the role of the PPP scheme needs to be widened and expedited. The Government needs to increase its role through larger plan allocations for financing the initial risky stages of the projects apart from viability gap funding. While transparency in operations at all levels is important, the risks would need to be clearly identified and shared in an appropriate manner. Apart from risk sharing, the government needs to proactively intervene to provide necessary support to the private sector which may also include lower cost of funds as well as slashing corporate tax rates.

As more and more government projects get aligned with the PPP model, various other innovative mechanisms would have to be in place to incentivize broader private sector participation. However, the emergence of the PPP model for infrastructure development, on a large scale, will pose major challenges for both governments and private investors. This new model does not call for a total retreat or withdrawal by governments, but only involves a shift to good governance, and requires an upgrade of regulatory, restructuring, and monitoring roles. Without significantly improved governance, the shift to increased PPP could just mean monopoly powers being shifted to the well-connected in the private sector and eventually become unsustainable. The avenues for increasing investment in infrastructure through a mix of public investment, PPPs and through exclusive private investments, wherever feasible, must be explored.

Apart from freeing government resources for greater investments in other sectors, PPPs would infuse private sector expertise together with efficiencies in operation and maintenance, thus leading to improved quality of public services. PPP involves identifying sources for funding, designing, implementing, operating and managing the project. In some cases, part of the financing is undertaken by providing capital subsidy for the project, and is partly arranged by the private party with the operations being run jointly or under a contractual arrangement with any other party. Important challenges in going to scale relate to standardization and coordination of projects in different stages and sectors of infrastructural growth.

## Recent Initiatives by the Government of India (GoI)

The Union Budget 2021-22 allocated approximately ₹1.18 lakh crores to the Ministry for Road Transport and Highways. It highlighted that 8,500 km of roads and highways projects will be awarded by March 2022 to further augment road infrastructure, along with adding 11,000 km of highways by next fiscal. Furthermore, Economic Corridors, with an investment of over 2 lakh crores, are being planned for Tamil Nadu, Kerala, West Bengal, and Assam. [8] Additionally, the Ministry for Road Transport and Highways (MoRTH) is eyeing a separate funding agency for the highways sector in lines similar to those like Power Finance Corporation (PFC) or the Indian Railways Finance Corporation. In an earlier objective, the National Highways Authority of India (NHAI) also eyes to achieve a 100km/day construction of highways against the present 37 km/day.[9] Other broad initiatives are listed below.

### Bharatmala Pariyojana



The Cabinet Committee on Economic Affairs approved the implementation of an umbrella programme for the National Highways – “Bharatmala Pariyojana Phase-I” for construction/upgradation of National Highways of 34,800 kms length, which includes development of about 9,000 km length of Economic corridors, about 6,000 km length of Inter-corridor and feeder roads, about 5,000 km length of National Corridors Efficiency improvements, about 2,000 km length of Border and International connectivity roads, about 2,000 km length of Coastal and port connectivity roads, about 800 km length of Expressways and balance length of about 10,000 km of roads under National Highways Development Project) over a period of 5 years (2017-18 to 2021-22) at an estimated outlay of ₹5,35,000 crore. [10] Till January 2021, road projects with an aggregate length of about 13,521 km, and costing ₹3,45,000 crore have been approved under Bharatmala Pariyojana Phase-I. [11]



## Upcoming Accolades [12]

- Kanpur-Lucknow Expressway: 63 km access-controlled expressway connecting the two key economic centres of UP, will provide alternate route to the congested NH 27. Entire corridor will be awarded in the FY 2021-22.
- Chennai-Salem Corridor: 277 km access-controlled corridor will provide 60 km shorter and faster connectivity between industrial districts of western Tamil Nadu and Chennai. Entire corridor will be awarded in the FY 2021-22.
- Raipur-Vishakhapatnam Corridor: 464 km corridor connecting Raipur to the East Coast through Chhattisgarh, Orissa and North Andhra Pradesh will improve connectivity and thrust economic development in the region. 340 km will be awarded in the current FY and the rest 120 km will be awarded in the FY 2021-22.
- Green National Highways Corridor Project (GNHCP): The GNHCP Scheme has been approved involving investment of ₹7,662.47 crores which includes a loan amount of US\$ 500 Million from the World Bank. Loan agreement was signed in Dec'2020 with World Bank. The project includes upgradation of about 781 km length of various National Highways passing through the states of Rajasthan, Himachal Pradesh, Uttar Pradesh, and Andhra Pradesh. Out of total length of 781 km, work on 287.96 km having civil cost of ₹1664.44 crore has been awarded. The schedule date of completion is December 2025. [13]
- The Delhi-Mumbai Expressway: The greenfield expressway project of 1,320 km which will be built at an estimated total project cost of ₹90,000 crore is expected to get completed by 2023.

Apart from above, Bengaluru-Chennai Expressway, Delhi-Dehradun Economic Corridor, Amritsar-Bhatinda-Jamnagar corridor etc. are others among the list.

## Digital Initiatives [14]

- BhoomiRashi – The Ministry has launched BhoomiRashi portal to digitize the Land Acquisition notification process and avoid parking of public funds with the Competent Authority for Land Acquisition (CALA). The system helps in expediting the process by providing simultaneous Hindi translation and has been made compatible with the e-gazette for expeditious publication of notification.
- E-Tolling – National Electronic Toll Collection (NETC) programme has been implemented on pan-India basis in order to ensure seamless movement of traffic through fee plazas and increase transparency in collection of user fee using FASTag. Towards the objective of achieving 100 per cent collection through electronic payment, the Government has mandated to declare all lanes, except one lane in each direction as FASTag lane w.e.f. December 2019. This one lane in each direction will accept all other modes of payments including FASTag.

## National Infrastructure Pipeline (NIP)

In the roads sector, total capital expenditure of ₹20,33,823 crore by both the Centre and States would be made between FY20-25. About 1,820 projects have been identified. The total capital expenditure for these projects by the Centre is estimated at about ₹13.8 lakh crore over the given fiscals (see Table 4).

Moreover, roughly 63 per cent of the total capital expenditure would be allocated towards national highways, 11 per cent towards expressways and 26 per cent towards state highways/district roads. [15]

**Table 4: Capital expenditure to be incurred over FY20 to FY25 (₹ crore)**

	<b>FY20</b>	<b>FY21</b>	<b>FY22</b>	<b>FY23</b>	<b>FY24</b>	<b>FY25</b>	<b>Total</b>
<b>Centre</b>	2,47,838	2,59,714	2,51,695	1,72,484	1,70,238	2,80,411	<b>13,82,380</b>
<b>States</b>	84,721	1,23,569	1,05,271	80,296	70,523	52,249	<b>6,51,444</b>
<b>Total</b>	<b>3,32,559</b>	<b>3,83,283</b>	<b>3,56,966</b>	<b>2,52,780</b>	<b>2,40,761</b>	<b>3,32,659</b>	<b>20,33,823</b>

Note – For some projects year-wise phasing has not been provided, so capital outlay for FY20 to FY25 will not add up to total capital outlay.

Source: National Infrastructure Pipeline”, Vol.1&2

## Monetizing Assets

In August 2016, the Union Cabinet had authorised NHAI to monetize certain public funded National Highways projects. Such monetization includes transferring operations and maintenance of stretches of NHs to private contractors on a long-term basis. In 2021-22, ₹10,000 crore is estimated to be generated through such monetization. This is a 41 per cent annual increase from the actual monetization amount in 2019-20 which was ₹5,000 crore. [16] Additionally, at least 12 lots of highway bundles of over 6,000 km will be monetised before 2024. This is complemented by the recently announced ‘National Monetization Pipeline’ under which the government plans to monetize assets worth ₹6 lakh crore of which road sector includes over ₹1.6 lakh crore. [17]

## National Monetisation Pipeline for Roads

The National Highways (NH) construction is undertaken through three modes viz. EPC, BOT and HAM. It is estimated that in recent years, majority of the projects are being awarded through EPC and HAM mode and NHAI retains the tolling rights over these stretches. The NH network of 4 lane and above configuration, where NHAI reserves tolling rights, has been considered as amenable for monetisation for the purpose of identification of asset under NMP.

**Table 5: Asset Monetisation Plan in Road Sector**

<b>Parameters</b>	<b>Details/Values</b>
Asset length to be monetised	26,700 km
Asset Length as a percentage of Potential Asset Base (%)	20%
Indicative Monetisation Value over FY 2022-2025 (Rs crore)	Rs 1,60,200 crore
Share in overall NMP in value terms (%)	27%

Source: National Monetisation Pipeline, NITI Aayog; <https://www.niti.gov.in/national-monetisation-pipeline>

The aggregate length of assets considered for monetisation over FY 2022 to 2025 aggregate to 26,700 km. This is based on the following:

- The length of already/ to-be operational,

- Four lane highways and above in the country (entailing potential for revenue generation and thereby monetization).

- The total length of highway assets considered for monetisation (26,700 km) constitutes around 22% of the total NHs (estimated to be about 1,21,155 km) excluding the network operated by private sector under BOT (Toll) based PPP concessions.

The approach towards monetization of the Road sector is as follows:

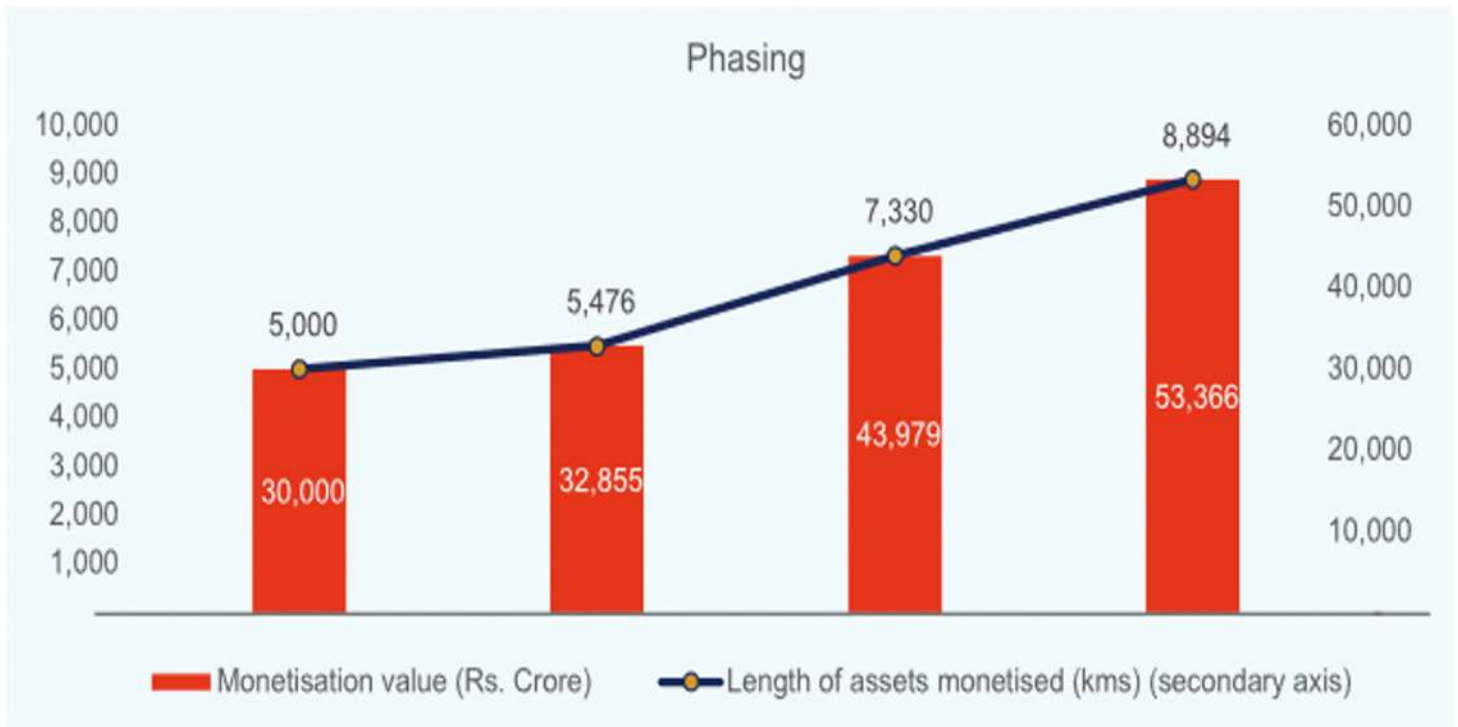
- ☒ Assets considered for monetization: Both existing operational NH assets and new NH roads which are constructed and operationalised over the next four years have been considered.

- ☒ The operational NHs constructed under EPC and HAM modes, especially in the 4-lane and above category have been considered for monetisation, including both the existing toll roads and potential toll roads to be added over the NMP period.

- ☒ Arriving at the indicative monetisation value: The average realisation by NHA1 under past TOT concessions successfully awarded has been in the range of Rs 9-14 crore per km. A lower range at Rs 6 crore per km has been assumed to assess indicative monetisation value to factor in certain lower traffic stretches in the portfolio and impact of scale on monetisation.

The total Indicative Monetisation Value of assets considered for monetisation is estimated at Rs. 1.6 lakh crore from FY 2022 to 2025. The asset pipeline has been phased out over the NMP period to ensure better preparedness and improved marketability. The summary of annual phasing is as follows:

**Figure 1: Indicative value of Roads Monetisation pipeline (Rs crore)**



## Industry Risk

With increased investment outlay, and NIP in progress, the prospects look bright for the future. However, the roads sector has been facing several constraints such as lack of equity with developers, higher cost of financing, shortfall in funds for maintenance, significant increase in land acquisition cost, and other bottlenecks. Major challenges are discussed as follows:

## Land Acquisition

In 2017-18, NHAI spent more funds on land acquisition (41 per cent of the expenses) as compared to project expenditure (39 per cent). The Standing Committee (2020-21) noted that the average rate (cost) of land acquisition has increased significantly from about ₹0.92 crore/hectare in 2013-14 to ₹3.13 crore/hectare in 2019-20 (an increase of 240 per cent). The Committee expressed deep concerns on the rising cost and recommended that more action is required in land acquisition related problems. [18]

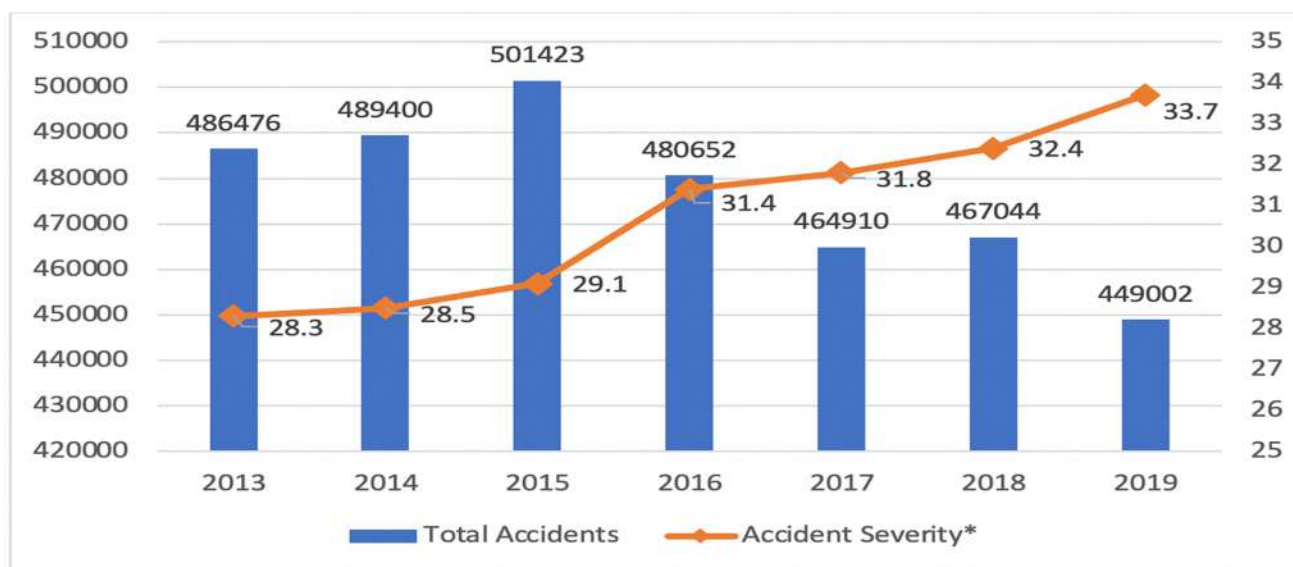
## Low Investment in Road Maintenance

In 2021-22, the Ministry has allocated ₹2,680 crore towards the maintenance of roads and highways (including toll bridges). This is about 2 per cent of the ministry's budget. Maintenance of roads should be given top priority as it increases the life span of roads. NITI Aayog has suggested that 10 per cent of the Ministry's annual budget should be earmarked for road maintenance. [19]

## Road Accidents

As per the World Road Statistics, 2018, India ranks first in the number of road accident deaths (among 199 countries reported), followed by China and the US. As per the WHO Global Report on Road Safety 2018,[20] about 11 per cent of the accident-related deaths in the world occur in India. A World Bank report [21] further highlights that as high as 44 per cent of the households in rural areas reported at least one death after a road crash, compared to 11.6 per cent of the households in urban areas. In 2021-22, the Ministry has allocated ₹336 crore towards road transport and safety. The amount allocated towards road safety in 2021-22 is about 0.3 per cent of the Ministry's total budget. The Committee felt that one of the major reasons behind road accidents is the poor condition of roads. Potholes can be fatal. [22] A snapshot of the number of accidents is given in the figure below (Figure 2).

**Figure 2: Road Accidents in India**



Note – as per the latest estimates available with MoRTH. \* Number of persons killed per 100 accidents.  
Source: Ministry of Road Transport & Highways (MoRTH) Annual Report, 2020-21.

## Delays in Completion of Road Projects

It has been observed that only about 1 out of 4 road projects had been completed on time by the Ministry in 2018-19 and 2019-20. A Parliamentary Standing Committee (Transport, Tourism and Culture (No. 287), Rajya Sabha)

in its report [23] was tormented to note that 888 road projects under the Ministry at present are delayed, which amounts to ₹3,15,373.3 crores involving a length of 27,665.3 kilometres. Delays in completion of ongoing road projects cause enormous loss of time and greater consumption of fuel, to countless number of road users across the country, besides the increase in the project cost that has to be incurred by the Ministry. The Committee desired that the Ministry should focus to prioritize completion of ongoing delayed projects.

## Revenue Loss

The pandemic has led to toll revenue loss for MoRTH. For example, NHAI incurred revenue loss of around ₹3,512 crore in FY21 due to the pandemic, exacerbated by the ongoing farmer protests. The table below (Table 6) highlights the reduction in the revenue collected by FASTags during past months.

**Table 6: Toll Collection (FASTags)\***

Month	Amount (₹ crore)
Mar'21	3,086
Apr'21	2,777
May'21	2,125
June'21	2,576
July'21	2,976

\* Around 96% of the total national highways is currently collected through the electronic route using FASTag.

Source: "NHAI InvIT to hit market in early September", Financial Express (17th August 2021).

Available at <https://www.financialexpress.com/market/nhai-inv-it-to-hit-market-in-early-september/2312095/>

The impact was continued during the second wave which reduced the toll collection in the months of April and May 2021.

## Challenges related to raw materials, land availability

The growth of the roads & highways crucially depend on quarry, stone and sand availability. IWAI and NHAI coordinates with road transport in this regard, and NHAI will procure quarry licence from state governments. Land acquisition also remains a sensitive aspect, and growth will depend on easing of this issue. Quarry material, stone, sand which are the key raw materials normally constitute 30% of a typical project. There have been many cases across countries including Rajasthan and Bihar where private miners exploited the market when quarrying was banned. Construction cost increased in many instances, due to this issue.

## Conclusion

Infrastructure financing underwent a paradigm shift in the post-reforms period. There is, however, a fair distance to traverse. Meeting exponentially increasing requirements of infrastructure financing requires putting in place and significantly upscaling innovative infrastructure financing mechanisms, restructuring and regulatory reform progresses, monitoring and evaluation systems to track unfolding developments and effect mid-course correction, where ever necessary.

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