

Building the future: Infrastructure investment opportunities in India

December 2023

Foreword

India is in a strong position to continue its impressive economic performance and become a US\$30 trillion economy by FY47. This will create a significant opportunity for India's transportation and logistics sector, which is expected to see investments to the tune of US\$146 billion over the next few years.

To realize the full potential that exists in the sector, it is imperative for the private sector and the government to collaborate and complement each other. The government has launched several flagship initiatives to enable faster decision making, optimization of resources and bring in efficiencies in cost of logistics. These initiatives include GatiShakti, Maritime Vision, National Logistics Policy, National Rail Vision, UDAN Scheme and Bharatmala Pariyojana. Simultaneously, the government has also focused on facilitating private sector investments through reforms in proactive investment facilitation, introduction of alternate funding avenues and simplification of exit strategies. To become a multi-trillion-dollar economy, India will need to focus on increasing private participation further.

Although multiple initiatives for private sector facilitation are in place, there is a long way to go in achieving desired private sector participation for the ambitious growth plan ahead of us. It is important for private sector players to learn from successful case studies, undertake due diligence, forge sector-specific partnerships and optimize their resources. Together, a right policy environment with diligent investors can unlock the sector's true growth potential.

To help set a context for discussion among stakeholders, this thought leadership highlights key policies and projects for private sector involvement, key focus sectors for foreign capital and how India is shaping up a sustainable transport ecosystem. It aims to facilitate development of a roadmap to ensure that India's transport sector leapfrogs and can benefit from the multi-fold GDP growth projected for the Indian economy.



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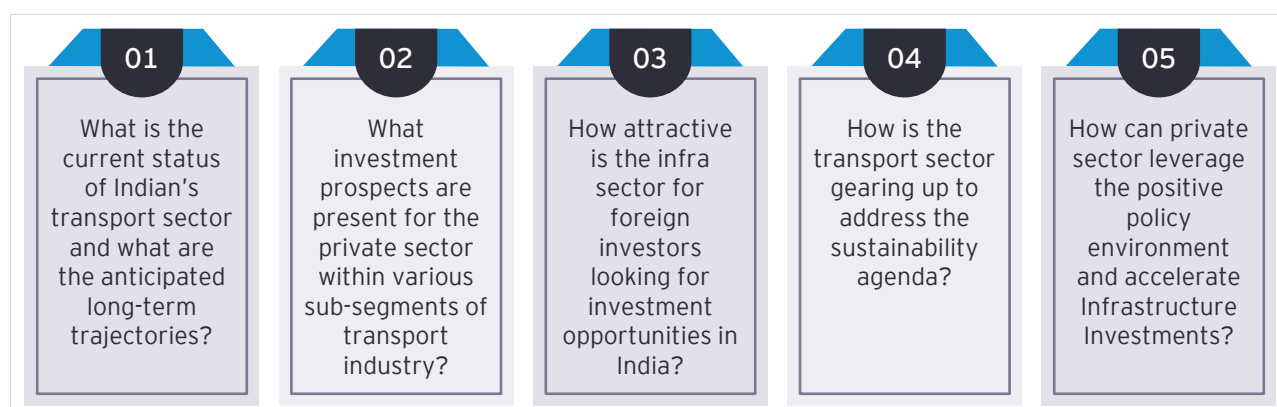
Executive summary

Setting the context

How can India achieve the target of becoming a US\$30 trillion economy by 2047? In the pursuit of the Amrit Kaal, every sector will contribute, with infrastructure development set to play a crucial role over the next 25 years. In this report we discuss key transport sectors

under the infrastructure umbrella. These include - roads and highways, railways, ports, airports, urban public transport, and logistics parks that will spearhead the fast-paced economic growth.

The report answers five key questions:



India has attained critical mass as the fifth largest economy in the world, realized primarily on account of its policies of economic liberalization, which made it more market-oriented, allowed for a greater role for private capital and in the process increased its global competitiveness. The growth projections for the Indian economy are the highest for any large economy over the coming decades.

Infrastructure is at the forefront of economic development in India. The government allocated 3.3% of the country's GDP towards infrastructure sector in FY24. It has also launched the National Infrastructure Pipeline (NIP) with targeted investments of US\$1.4 trillion.

Transport sector has been a focus area for the government over the past years and is also expected to receive significant investments going forward. It is expected to grow at approximately 4.5% compounded

annual growth rate (CAGR) from 2022 to 2050. The government introduced the Gati Shakti initiative, with a focus on major transport sectors. It aims to incorporate and bring together the infrastructure schemes such as Bharatmala, Sagarmala, UDAN (air transport) etc. under a digital platform.

Total budgetary outlay for all infrastructure-related ministries increased from around INR3.7 lakh crore in FY23 to INR5 lakh crore in FY24.


Around INR69 lakh crore worth projects are currently at various stages of development, as per the government's India Investment Grid (IIG) database. Roads & Highways account for the highest share, followed by Railways and Urban Public Transport. The government has created various ambitious targets for

the expansion of its transport sectors. This includes the construction of a 2 lakh-km national highway network by 2025, increasing the total number of airports in the country from 140 to 220 airports by 2025, higher railway construction speed of 19 km of new tracks every day in FY24., operationalising 23 waterways by 2030, and developing 35 Multi-Modal Logistics Parks (MMLPs), among others.

India accounts for around 5% share of the global Private Participation in Infrastructure (PPI) amount.

The magnitude of funds required to finance government’s ambitions and the pipeline of infrastructure projects is significant. As per the Confederation of Indian Industries (CII), India faces an estimated infrastructure financing gap of over 5% of its GDP¹. Around INR147 billion worth projects are currently under conceptualization phase in the country, as per the IIG data, which presents significant upcoming opportunities for the private sector to provide the much-needed capital. Public-private partnerships (PPPs) have already been a vital instrument for private sector participation across various infrastructure segments. PPPs have been a preferred mode for the construction of airports, ports, highways, and logistics parks in India.

Private sector will have significant investment opportunities across various transportation sectors:




Airports

India is amongst the fastest-growing aviation markets globally and is expected to witness a rise in the number of air passengers from 144 million in 2019-20 to 400 million in 2025-26. Government plans to invest INR98,000 crore on construction of new airports and modernising existing ones by 2025. Over two-third of this investment (INR67,000 crore) will be made by the private sector on greenfield projects. Modernizing of existing airports in the country has also contributed to greater private sector participation. The government also offers various incentives to investments, such as tax exemptions and reduced custom duties on inputs.

India’s roads and highways infrastructure market is expected to register a CAGR growth of 36.2% from 2016 to 2025. Highway construction is already expanding at a fast pace in the country, increasing from 6,061 km in FY16 to 10,457 km of roads constructed in FY22. The government has been engaging private sector by awarding Build-Operate-Transfer (BOT) and Hybrid Annuity Mode (HAM) through PPP and monetizing its existing assets. The sector accounts for around 27% share in the National Monetization Pipeline (NMP) and place to raise up to INR45,000 crore through monetization in FY24. Regarding greenfield highway projects, FY24 onwards, nearly 75% projects will be bid out on PPP mode



Roads and highways



Ports

The private sector participation has led to a doubling of the Indian ports’ capacity over the last ten years. The Ministry further aims to increase the share of cargo handling capacity of PPP terminals to 85% in the long-term from current 50%. The sector is going to present a host of opportunities to the private players in the ports construction and modernization, as well as in green hydrogen-related projects

¹ Infrastructure Financing: The Way Forward, CII

India's metro rail network has grown remarkably since 2014. It started from a network spread across five cities and 229 km and has grown to 860 km across 20 cities in April 2023. The sector has been engaging private players through PPP projects, such as the Pune Metro Line III and Hyderabad Metro's lines. Upcoming opportunities in the sector include the ongoing review of feasibility in Chandigarh and exploration of PPP modes, either for complete provisioning of the project or some unbundled services



Urban Public Transport - Metro Rail



Logistics Parks

The logistics sector in India is expected to grow from US\$250 billion in 2021 to US\$ 380 billion in 2025, on the back of government's push to create 35 Multimodal Logistics Parks (MMLPs) in the country and reduce logistics costs from 13% to 9% of GDP by 2024. The MMLPs will be developed under PPP on Design, Finance, Build-Operate-Transfer mode. The government has already signed agreements for various MMLPs in line with its plan to bid out a total of 6-7 MMLPs in FY24, with each involving private investments of over INR700-1,000 crore. It has also been giving a strong push to develop complementary infrastructure such as Dedicated Freight Corridors for freight, Bharatmala for road connectivity

The National Monetization Pipeline (NMP) includes ambitious plans to privatise railway assets. It accounts for the second-largest share of 25% in the NMP with a value of INR1.52 lakh crore. Asset monetization of INR44,907 crore has been planned for FY24 and INR32,557 crore for FY25. However, the sector's progress has been slow, and it has been plagued by enthusiasm from the private sector



Railways

India has also experienced a notable surge in FDI inflows in the recent years attributed to comprehensive policy reforms, proactive investment facilitation, and the introduction of alternate funding avenues. These initiatives backed by the Indian government, have created a conducive environment for foreign investors, fostering increased confidence and participation in the country's economic landscape. Between FY2019 and FY2022, the FDI inflows into the transport sector experienced a surge, more than doubling during this period. Notably, ports and highways emerged as the sectors with the highest CAGR during these years, reflecting a substantial investor interest and confidence in these critical infrastructure segments. Recent PE deals in India have also predominantly focused on road assets, attracting investors from Canada to Singapore.

Infrastructure Investment Trusts (InvITs) have emerged as a noteworthy financial instrument for PE investors in the sector. Since 2018, they accounted for 16% of PE/VC deals in the infrastructure sector. InvITs have gained prominence as they are also part of the government's National Monetization Plan for road projects. The initial success of InvITs in the road sector has prompted the government to consider their application for ports, showcasing their potential as a versatile investment tool in the infrastructure development.

Foreign investments in the transport sector include significant contributions in the form of loans from multilateral development banks, notably the European Investment Bank (EIB). India stands out as the largest beneficiary of EIB transport funding outside Europe. Additionally, the Asian Development Bank (ADB) has actively invested in numerous transport projects within India.

Since 2018, InvITs account for 16% of PE/VC deals in the infrastructure sector.

As the transport sector in India flourishes, there is also a growing imperative for embracing more sustainable practices. Transport sector is a major contributor to the country's overall emissions and has a large role to play in meeting the pledged climate targets. Various government policies and schemes have been promoting green and sustainable initiatives. The progress in the sector is evident with initiatives such as installation of bio-toilets in train coaches, running airports, metro, and ports on renewable energy, setting up of some ports as green hubs, and using plastic waste in roads construction. A synergy between private sector goals and the government's targets will be essential to ensure sustainable development.

The transport infrastructure sector has been receiving significant attention from the government and strong private participation, right from the 1st port concession in 1997 to recent road InvITs. To become a trillion-dollar economy, India will need to focus on increasing private participation further. While various initiatives such as efficient approval systems, supportive policies, longer concession periods, and easier exits, have been put in place there is a long way

to go. At the same time, private sector players will need to tread the waters carefully and ensure right efforts. Some key steps would include drawing lessons from successful case studies, undertaking careful due diligence, forging sector-specific partnerships, optimizing their resources, and better planning of funding requirements. Together, a right policy environment with diligent investors can unlock the sector's true growth potential.



An aerial photograph of a wide, multi-lane highway with several lanes in each direction. The highway is flanked by greenery and urban development. In the background, a city skyline is visible under a hazy sky. The image is overlaid with blue geometric shapes and a large white number '1'.

1

Transport sector - overview and future plans

Transport sector - overview and future plans

India's real GDP growth is forecasted to average 6.5% from FY23 to FY28², making it one of the world's fastest-growing economies. Infrastructure will be at the forefront of the economic development India aims to achieve. The government is actively concentrating on the sector creating policies to build top-notch infrastructure in the country. In FY24, it has allocated 3.3% of GDP to the infrastructure sector.³

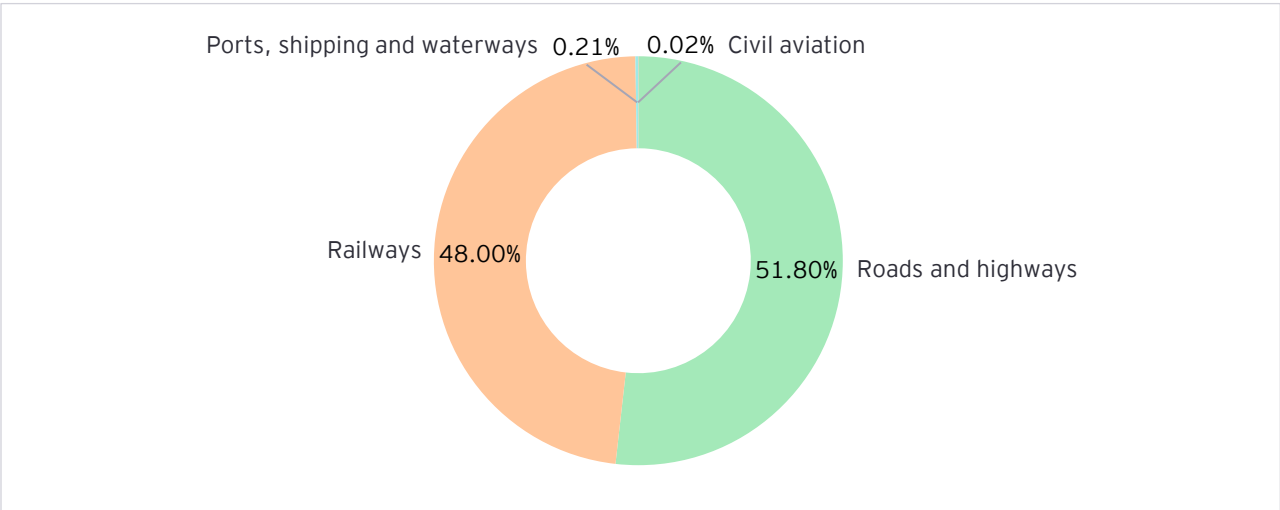
Under National Infrastructure Pipeline (NIP), overall infrastructure projects are valued at US\$1.4 trillion, which may evolve as the plan was made pre-COVID.

Transport sector forms the largest sector under the National Infrastructure Pipeline. Under the National Infrastructure Pipeline (NIP), US\$1.4 trillion infrastructure projects are expected to be completed by 2025, of which 21% are expected from the private sector. NIP provides a comprehensive list of projects that would need to be implemented for India to upgrade its infrastructure in all areas i.e., transportation, energy, communications and social infrastructure. Goals of the NIP were to ensure seamless connectivity, prioritization of resources and timely creation of capacities.

According to India Investment Grid (IIG), ongoing projects in transport infrastructure sector are valued at INR69 lakh crore, across stages of development. Among these, top three sectors by value are Roads and Highways (48%), Railways (30%) and Urban Public Transport (12%)⁴.

The total budgets for all the infrastructure-related ministries increased from around INR3.7 lakh crore in FY2023 to INR5 lakh crore in FY2024⁵.

Exhibit 1: Break-up of budget expenditure on transport in FY2024, by sector (%)








Source: EMIS Insights - India Transportation Sector Report 2023-2024

² India at 100, EY India
³ Envisioning the future of Indian coordination@2047, EY India
India's 'eye-watering' 1.7 pc spend on transport upgrade to set stage for USD 5 trillion economy, Press Trust of India Limited, Accessed via Factiva
EMIS Insights - India Transportation Sector Report 2023-2024, EMIS
⁴ Opportunities, India Infrastructure Grid
⁵ EMIS Insights - India Transportation Sector Report 2023-2024, EMIS

Current and future analysis of Indian transport infrastructure

India’s transportation and logistics sector is poised to grow at a compounded annual growth rate (CAGR) of around 4.5% from 2022 to 2050⁶. This growth will align with the government's targets to reform and develop the transport sector of the country, from capacity expansion of ports to building greenfield airports and expressways.

Exhibit 2: Major plans of Indian transport infrastructure⁷

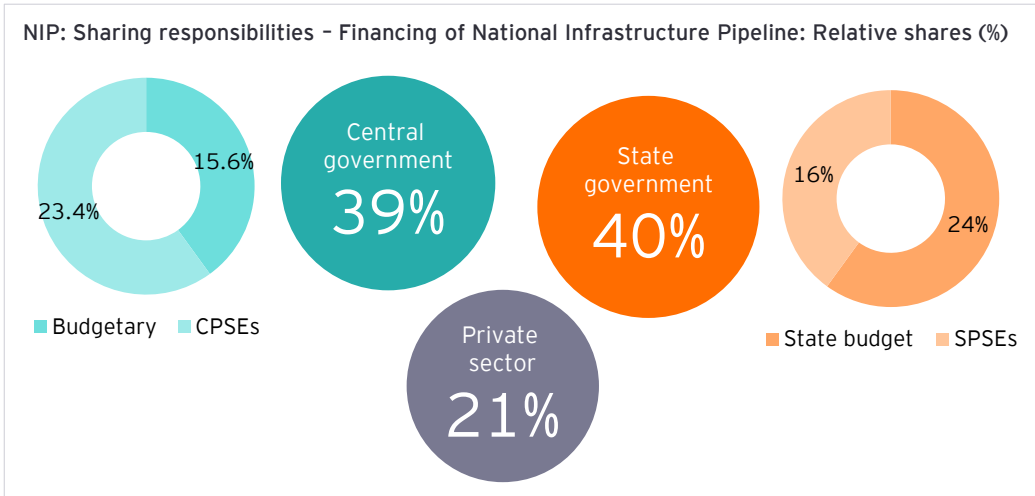
				
Roads	Airports	Railways	Ports	Logistics
<ul style="list-style-type: none">✓ Target to develop 22 new greenfield expressways to cut down travel time✓ The government aims to build a two lakh-km national highway network by 2025	<ul style="list-style-type: none">✓ Target increasing total number of airports from 140 in 2022 to 220 in 2025	<ul style="list-style-type: none">✓ Target of higher construction speed of 19 km of new tracks every day in FY2024 (up from 12 km in FY23)✓ MNCs expected to deploy KAVACH, India made train safety system	<ul style="list-style-type: none">✓ Target of increasing ports’ handling capacity from 2,600 Million Ton Per Annum in FY23 to 10,000 MTPA by 2047✓ The government aims to operationalize 23 waterways by 2030	<ul style="list-style-type: none">✓ Total of 35 Multi-Modal Logistics Parks (MMLPs) to be developed in India under PPP on Design, Build, Finance, Operate and Transfer (DBFOT) mode✓ National Logistics Policy (NLP) was introduced to lower logistics cost from 13% of the GDP to the global average of 8% by 2030
Key enabling policies supporting the targets				
Bharatmala Pariyojana	UDAN Scheme	National Rail Plan Vision - 2030	Sagarmala	National Logistics Policy

⁶ India at 100, EY India
Infrastructure Development in India, Invest India, <https://www.investindia.gov.in/team-india-blogs/infrastructure-development-india>
⁷ All India Radio News, Press Information Bureau, Factiva
Working towards development of 2 lakh km National Highway Network by 2025, says Nitin Gadkari, The Statesman, Accessed via Factiva; Indian Aviation Has Come Of Age: Jyotiraditya Scindia, Business Standard, Accessed via Factiva; Railways plans to lay 19 km new track per day, Deccan Herald, Accessed via Factiva; India targeting 300% increase in port handling capacity by 2047: Shipping Minister, Accessed via Factiva; Govt aims to operationalise 23 waterways by 2030: PM Modi, HT, Accessed via Factiva; 35 Multi-Modal Logistics Parks (MMLP) Projects to be developed under Public Private Partnership (PPP) across the country, PIB; National Logistics Policy in India, Invest India

Private sector is expected to play a major role in realizing Government's plan for infrastructure creation

India intends to prioritize capital investment over revenue expenditure to drive longer-term growth. Capex outlay has increased from 1.6% (pre-COVID) to 2.9% of the GDP for 2022-23. It is largely directed

towards the infrastructure sector, which results in economic growth and leads to job creation. More than half of the 8,964 projects under NIP belong to the transport sector⁸.



Source: India at 100 report, EY

Private sector participation is crucial in financing key infrastructure projects in India as the government has to navigate fiscal constraints, spending money judiciously. Involving private sector fosters competitiveness in the industry enabling better talent pool and resources. India consistently ranks high in private sector involvement of infrastructure projects, due to the success achieved by the model.

Most of the emerging economies rely on the Public Private Partnership (PPP) model for building their infrastructure as it offers a platform for private sector to enhance their portfolio and showcase their expertise.

Exhibit 3: Top five countries in attracting the most significant Private Participation in Infrastructure (PPI) investments in 1H2023

Top 5 countries	Private Participation in Infrastructure (PPI) (US\$ million)	Percentage of Global PPI amount
China	14,989.26	41%
Philippines	4,033.42	11%
Brazil	3,171.46	9%
India	1,820.25	5%
Egypt	1,569.40	4%

Source: PPI report, 1H 2023 update, World Bank

The Indian government looks to private sector to spearhead the transport sector, presenting them with abundant opportunities in roads and highways, ports,

airports, logistics parks and railways. This landscape also offers a backdrop for fresh and innovative modes of private sector involvement.

⁸ Economic Survey 2022-23, India Budget



2

Investment
opportunities
in transport Infrastructure

Investment opportunities in transport infrastructure

As per the India Investment Grid, over two-third of the opportunities in the transport sector are set to be executed under the Engineering, Procurement, and Construction (EPC) mode, while approximately 10% (US\$15 billion) of the total project pipeline will be executed through PPP mode. The mode of operation

for around 17% (US\$24 billion) of opportunities is still to be finalized. In terms of the number of opportunities, PPPs account for 14% of projects, while those categorized as "To be finalized" in operating mode represent 13% of the total. EPC accounts for the highest share of over 50% in total opportunities.

Exhibit 4: Upcoming opportunities in transport sector, by operating mode

Sectors	PPP		EPC		To be finalized		Others	
	No. of projects	Value (US\$ billion)	No. of projects	Value (US\$ billion)	No. of projects	Value (US\$ billion)	No. of projects	Value (US\$ billion)
Roads and highways	59	6.7	282	37	54	6.0	76	3.9
Logistics	37	5.0	74	23.9	32	8.0	10	1.3
Urban public transport	9	2.1	26	20.8	14	4.9	3	0.3
Railways	5	1.2	47	16.2	31	4.6	-	-
Airports and aviation	6	0.3	19	3.4	4	0.6	1	0.0
Inland waterways	1	0.04	-	-	-	-	-	-

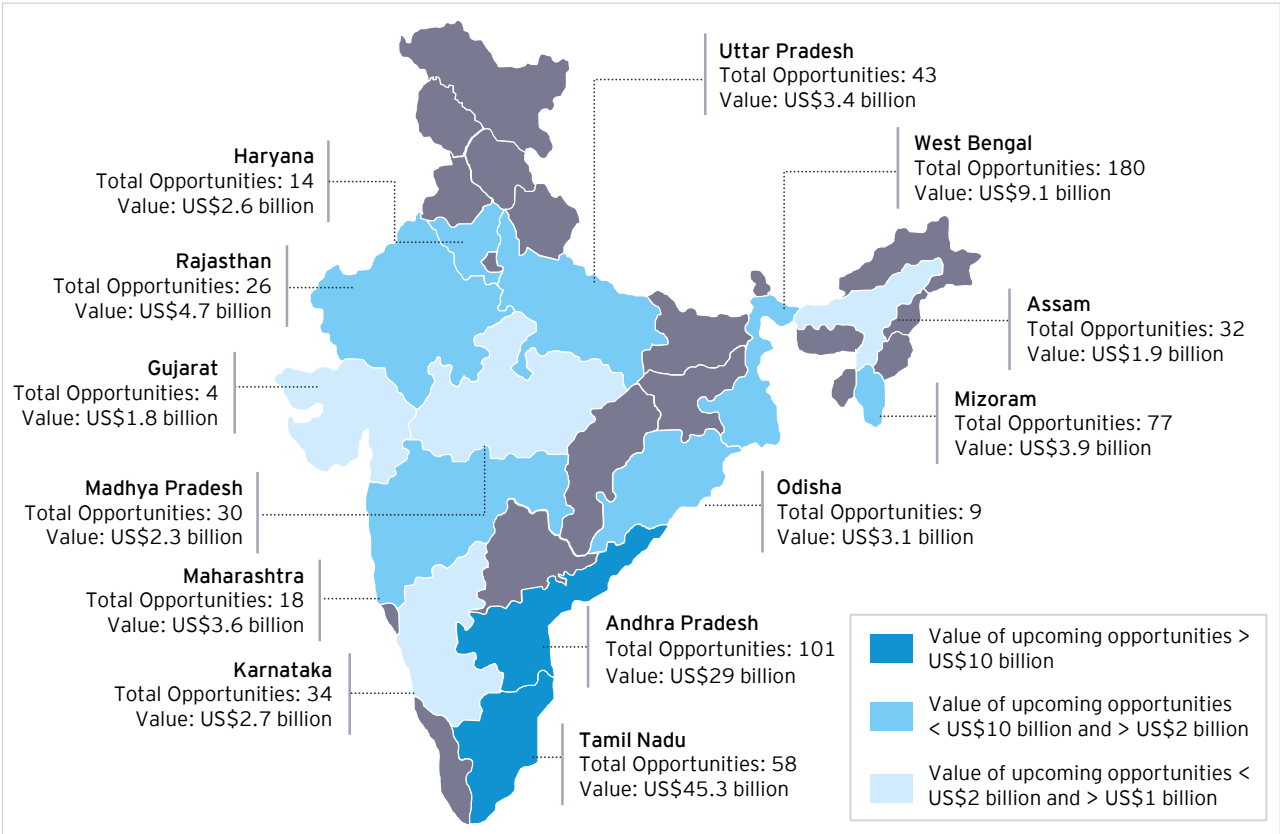
Notes: Includes opportunities under conceptualization stage only.
Break-up of opportunities for Shipping is not available.
Others has been calculated by subtracting total opportunities under three modes (PPP, EPC, To be finalised) from the overall sector numbers. Further break-up of opportunities under this category is not available. The data includes opportunites from both State and Central governments.
Source: India Investment Grid (IIG)

Roads and Highways sector presents the most opportunities. A substantial number of projects currently are in the conceptualization stage. This sector alone represents nearly 60% of all upcoming projects. It is followed by Logistics and Urban Public Transport sectors, with a strong pipeline of 153 and 52 projects, respectively. When combined, these three sectors (Roads and Highways, Logistics, and Urban Public Transport) comprise a significant 80% share of the total value of upcoming opportunities.

Sectors	No. of opportunities	Value (US\$ billion)
Roads and highways	471	53.5
Logistics	153	38.2
Urban public transport	52	28.1
Railways	83	22.5
Airports and Aviation	30	4.3
Shipping	8	0.5
Inland waterways	1	0.04

Tamil Nadu comprises over one-third share of in the total value of upcoming transport infrastructure opportunities. It is followed by Andhra Pradesh with roughly 25% share (US\$29 billion) and West Bengal accounts with approximately 8% share (US\$9 billion).

Exhibit 5: Upcoming transport infrastructure opportunities, by states



Notes: Includes opportunities under conceptualization stage only
Based on analysis of top 10 states for each sector. Thus, the value for some states might not equate total upcoming opportunities there.
Covers states with value > US\$1 billion. Other states with less than US\$1 billion opportunities are: Lakshadweep = US\$0.5 billion; Andaman & Nicobar Islands = US\$0.2 billion
Does not include opportunities in Shipping sector since detailed break-up was not available.
Source: India Investment Grid (IIG)

Key insights on major sub-sectors

Airports

India is amongst the fastest-growing aviation markets globally and is the third-largest market for domestic aviation⁹. The aviation sector has witnessed an impressive growth trajectory with a significant growth in passenger traffic over the years. The air passengers are expected to rise from 144 million in 2019-20 to 400 million in 2025-26¹⁰.

The government plans to spend INR98,000 crore by 2025 on modernizing existing airports and constructing new ones to cope up with this traffic and provide enhanced connectivity. Over two-third of this investment (INR67,000 crore) will be made by the private sector on greenfield projects in Goa, Navi Mumbai, and Greater Noida, along with seven privately-run airports¹¹. The target is to increase total number of airports from 140 in 2022 to 220 in 2025. Newly assigned international airports include those in

Tirupati, Vijayawada, Kushinagar, and Mopa, will increase the number of international airports to 30.

Government's focus has been on supporting aviation industry in the country through competition-led growth and a stable policy regime. It began the privatization of airports in 2003, with concession agreements signed for the Hyderabad airport in 2004 and Delhi and Mumbai airports in 2006 for a period of 30 years.



PPPs (including concessions awarded for privatisation) is the preferred mode for airport development - 14 airports are operating on PPP mode¹². It has facilitated the development of airports in Tier-II and Tier-III cities and enhancing revenues of the Airports Authority of India (AAI). For the upcoming privatisation projects, the government plans to combine one big airport with a smaller one to bid them as a single unit to attract more private sector players.¹³

How is the model working out for airports?

Current PPP projects	Opportunity avenues for PPP
Government has provided 'In-principle' approval for 21 greenfield airports under the Greenfield Airports (GFA) Policy in 2008. They are under various stages of implementation and include both government-funded and PPP projects	Seven out of the 21 approved greenfield airports received 'In-principle' approval for setting-up as international airports MoCA planning INR36,000 crore investment to develop greenfield airports under PPP
The greenfield projects are being built across Uttar Pradesh, Gujarat, Madhya Pradesh, Maharashtra, Goa, Karnataka, Kerala, Puducherry, Andhra Pradesh, West Bengal, Sikkim, and Arunachal Pradesh	Revive and develop 100 unserved and under-served airports, helipads, and water aerodromes by 2024 under the UDAN Scheme (Ude Desh ka Aam Nagrik)

⁹ Indian aviation market has huge potential waiting to be tapped: Top industry experts, The Economic Times
¹⁰ Airports to attract 1 trillion rupee investment in 4 years: Aviation Minister, The Economic Times, Accessed via Factiva
¹¹ Airports to attract 1 trillion rupee investment in 4 years: Aviation Minister, The Economic Times, Accessed via Factiva
¹² 14 airports operating under PPP in the country, PIB, 04th Dec 2023
¹³ In-Principle approval to set up 21 new Greenfield Airports in country, PIB
Investments worth Rs 36,000 cr planned for greenfield airports under PPP mode: Singh, The Economic Times
Greenfield Airports in India: 21 new airports operationalised! 7 get 'In-Principle' approval - All details here, The Economic Times
66 Indian airports operating on 100% green energy, govt informs Parliament, DD News

How is private participation working out for airports ¹⁴?

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 - ▶ PPP airports, such as Delhi, Hyderabad and Mumbai have been consistently ranked high in Asia Pacific by Airports Council International (ACI), in different categories
 - ▶ In FY2019, Delhi airport had total passenger traffic of 69.23 million. The airport is set to exceed its pre-COVID level in FY24, expected to cross 70 million. Hyderabad airport witnessed 12 million passenger traffic in 1HFY2024, presenting a 24% year-on-year increase
 - ▶ Incentives by government for investment in airport infrastructure both in form of tax exemptions and reduced custom duties on inputs
 - ▶ Government introduced the 2017 Airports Economic Regulatory Authority of India (AERA) order of Hybrid till i.e., only 30% of non-aeronautical revenues (car parking, F&B, etc.) would now cross-subsidise the airport tariffs, as against 100% under single till model. Airports such as Bangalore and Hyderabad were positively impacted due to this
This move was in interest of private operator and to attract more private investments in airports
- 
 - ▶ Airports have a long gestational period, leading to a delay in profit realization for the private sector players
 - ▶ Complex procedures and delays in regulatory approvals and clearances
 - ▶ Smaller cities with lesser traffic flow could result in muted interest from private parties



¹⁴ Delhi airport to cross 70 mn passenger traffic in FY24, says DIAL chief, Business Standard, via Factiva; At 12m, Hyd airport records its highest half-yearly footfall, Times of India, accessed via Factiva; New Approaches to PPP focusing on the Airport Sector, Niti Aayog; Six Indian airports adjudged at best airports by ACI in Asia Pacific region, The Times of India accessed via Factiva

Ports

India aims to increase the cargo handling capacity at its sea and river ports by 300% from the current 2,600 million tonnes per annum (MTPA) in culmination of the Amrit Kaal 2047¹⁵. The capacity of Indian ports has doubled in the last ten years mainly due to the investments done by private sector. About 90% of the new investment done in terminal and berth infrastructure in major Indian ports have seen the involvement of Public Private Partnership (PPP) model¹⁶. The Ministry aims to increase the share of cargo handling capacity of the PPP terminals to 85% in the long-term from the current capacity of 50%¹⁷.

The PPP mode has led to exponential growth of major ports in India leading to improved utilization of assets, created new infrastructure, and facilitated the country's national ports to compete with international ones. As of July 2022, a total of 86 projects worth INR55,000 crores have been granted approval under PPP¹⁸. Navi Mumbai's Jawaharlal Nehru Port is the first major port of India to become 100% landlord port with all berths operated on PPP model¹⁹.

How is the model working out for ports?

Current PPP projects	Opportunity avenues for PPP
In FY22, seven projects worth INR5,278 crore were awarded, and others were in various stages of bidding. In FY23, a total of nine projects worth INR9,544 crore were awarded under PPP	Investments worth INR22,900 crore will be awarded till 2024-25 in 44 projects for modernization and connectivity of ports
INR1,126.7 crore invested for the development of mechanised coal and container handling terminals at New Mangalore Port	Investments of more than INR52,000 crore being made in Kandla, Tuticorin and Paradeep ports for generation, storage, bunkering and refuelling of green hydrogen
INR654.97 crore invested for the development of coal terminal and berth work at Mormugao port	Tender of INR44,000 crore to build phase 1 of International Container Transshipment Port (ICTP) at Galathea Bay in Great Nicobar planned for early 2024
Concession worth INR872 crore was awarded to upgrade, operate, maintain, and transfer the terminal at the Jawaharlal Nehru Port Container Terminal's (JNPCT) berths	A new major port development has been cleared by the Government at Vadhavan in Maharashtra. The port will be developed under PPP mode

¹⁵ Vision 2047: Port Handling Capacity to be Raised by 4X, The Economics Times, accessed via Factiva
¹⁶ Roping in private players with the major ports, <https://pib.gov.in/PressReleaseSelfframePage.aspx?PRID=1839350>,
¹⁷ Jawaharlal Nehru Port becomes first 100% Landlord Major Port of India, <https://pib.gov.in/PressReleasePage.aspx?PRID=1842587>
¹⁸ Jawaharlal Nehru Port becomes first 100% Landlord Major Port of India, <https://pib.gov.in/PressReleasePage.aspx?PRID=1842587>
¹⁹ Shipping ministry to exceed 4-yr asset monetization aim; HT Mint, accessed via Factiva; PPP projects heralded growth of major ports: Shripad Naik, The Hindu, accessed via Factiva; Govt has pipeline of 44 port projects worth Rs 22,900 cr till 2024-25: Sarbananda Sonowal, PTI, accessed via Factiva; Major Indian ports attract over 20 firms for green hydrogen projects worth billions, The Hindu, accessed via Factiva; Jawaharlal Nehru Port becomes first 100% Landlord Major Port of India, <https://pib.gov.in/PressReleasePage.aspx?PRID=1842587>; Bids for Galathea Bay project likely next year, The Economic Times, accessed via Factiva; VADHAVAN PORT DEVELOPMENT, https://jnport.gov.in/filedata/JNPT_Vadhvan_Brochure_English_23_2021_03_11_06_09_21.pdf

Additional opportunities for private sector involvement include:

- ▶ Deployment of technology to increase efficiency,
- ▶ Upskilling through training and development programs,
- ▶ Enabling sustainability initiatives

The Ministry of Ports, Shipping and Waterways (MoPSW) is also reviving policies to deal and revive stressed PPP projects at major Indian ports.

The updated Model Concession Agreement aims at simplifying arbitrations and litigations. The issuance of latest Tariff Guidelines focuses on flexibility to PPP companies to fix tariffs as per market dynamics, amongst other reforms.

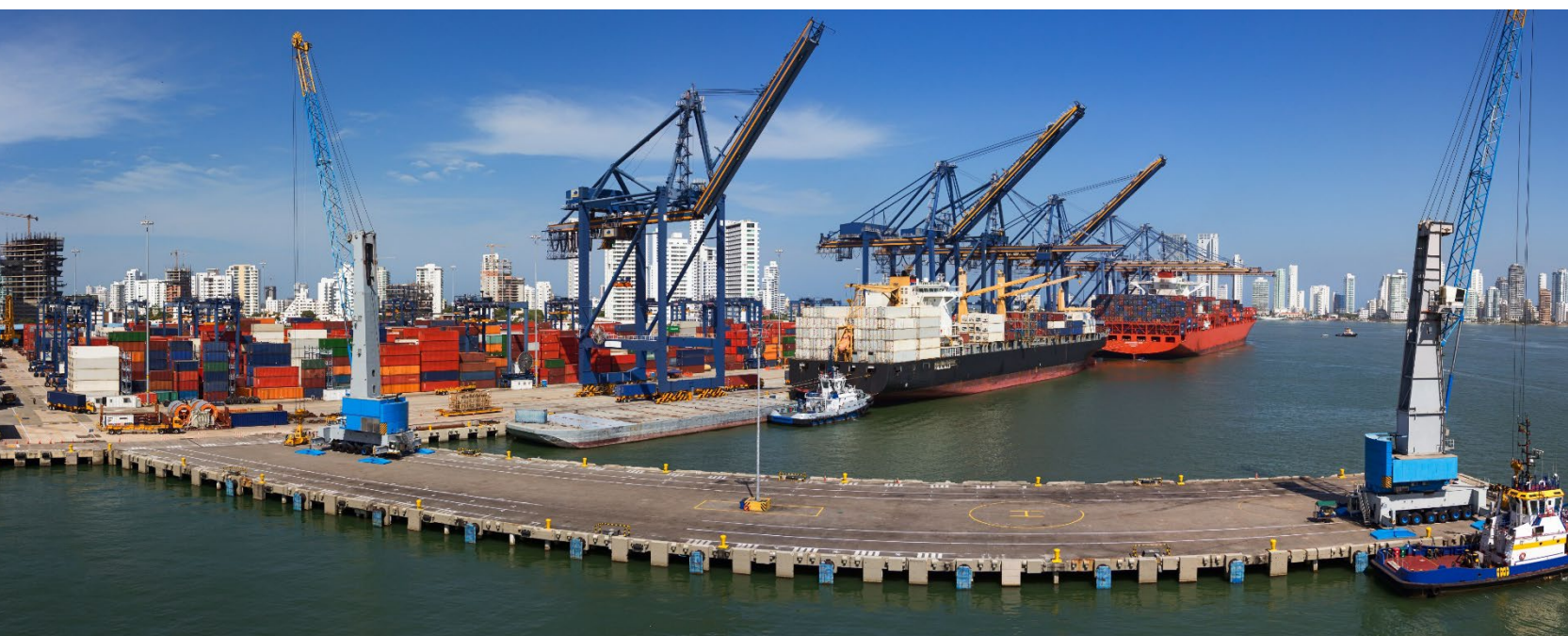
How is private participation working out for ports²⁰?



- ▶ PPP investments in ports have led to capacity enhancement from 800 MTPA in FY14 to 1,600 MTPA in FY22
- ▶ As per the rankings of World Bank Logistics Performance Index 2023, out of the 139 countries surveyed, India stood at a ranking of 38. It has gained 16 positions in the last eight years
- ▶ New regulations are also being discussed to ensure older PPP cargo terminal operators can charge market-driven prices, incorporating inflation. The prices would be indexed to the Wholesale Price Index (WPI) to a 60% extent. New PPP cargo handlers from 2021 are already under this regime
- ▶ Berth expansion project at Mumbai's Jawaharlal Nehru Port received an overwhelming response of 11 investors both domestic and international. The port is the one first one to become 100% landlord led
- ▶ Mumbai Port has also received a royalty price of INR4,520 per TEU for the above project, against the Minimum Reserve Price of INR1,800 per TEUs



- ▶ After a few years of operation, the PPP developer for Karaikal port faced financial constraints which led to an outstanding debt of INR 3000 crore, which ultimately led to its bankruptcy
- ▶ Private sector participants have been asking for the extension of concession period
- ▶ The sector could also benefit from an easier exit policy for concession agreements



²⁰ Adani Ports wins Karaikal bid with ₹1,200-crore offer, The Economic Times, accessed via Factiva; PPP projects herald growth of major ports, says Shripad Naik, The Hindu, accessed via Factiva; India jumps 6 places to Rank 38 in World Bank's Logistics Performance Index 2023, [https://pib.gov.in/PressReleasePage.aspx?PRID=1919925#:~:text=India%20improves%20in%20the%20logistics,Performance%20Index%20\(LPI%202023\)](https://pib.gov.in/PressReleasePage.aspx?PRID=1919925#:~:text=India%20improves%20in%20the%20logistics,Performance%20Index%20(LPI%202023);); Jawaharlal Nehru Port becomes first 100% Landlord Major Port of India, <https://pib.gov.in/PressReleasePage.aspx?PRID=1842587>; Private port terminal operators may get pricing freedom, The Economic Times, accessed via Factiva

Highways

The market for roads and highways infrastructure in India is expected to grow at a compounded annual growth rate (CAGR) of 36.2% from 2016 to 2025, backed by government's initiatives to improve transportation infrastructure in the country. The construction of roads/national highways has increased significantly over the years, from 6,061 km in FY16 to 10,457 km of roads constructed in FY22. During 2022-23, India had over 1.45 lakh km of national highways²¹.

PPP has remained a key model for the development of national highways to ensure better quality construction. Hybrid Annuity Mode (HAM) and Build-

Operate-Transfer (BOT) have been the preferred PPP modes for NHAI. Around 60% of the projects under first phase of Bharatmala Pariyojana were set to be based on HAM.



NHAI has also been actively monetizing its existing road assets by engaging investors that get to earn money generated from these assets without owning them. It makes up 27% share under the National Monetization Pipeline (NMP). Toll-operate-transfer (ToT) mode and Infrastructure investment trusts (InvITs) are being actively used as an investment mode by NHAI towards this. Institutional investors and pension funds remain its major investors²².

How is the model working out for highways?

Current PPP projects	Opportunity avenues for PPP
NHAI has already monetized around INR10,000 crore worth assets so far through InvITs and INR26,000 crore assets through ToT mode. Raised INR10,400 crore from monetization of 487.7 km road assets in FY23	NHAI has earmarked 46 projects, spanning more than 2,612 km for monetization in FY24
NHAI awarded 6,003 km highway projects worth INR1.26 lakh crore in FY23. More than 50% of length (3,351 km) was awarded under HAM	Plans are in place to raise up to INR45,000 crore in FY24 through monetization, of which INR30,000 crore will be raised through ToT mode and INR15,000 crore through InvITs Revive and develop 100 unserved and under-served airports, helipads, and water aerodromes by 2024 under the UDAN Scheme (Ude Desh ka Aam Nagrik)
Delhi-Meerut Expressway (Package-1) was the first HAM project and the first 14-lane green expressway, completed in 2018, almost a year ahead of schedule	NHAI will bid out nearly 75% of new highway projects on PPP, FY24 onwards. Projects worth over INR500 crore will preferably be executed through PPP mode

²¹ Highway to Growth, Invest India, <https://www.investindia.gov.in/sector/roads-highways>
²² NHAI awards 6,003 km of highway projects in FY23: report, Mint, Accessed via Factiva
Government to build more highways on PPP, TOI, Accessed via Factiva

How is private participation working out for highways²³?

- 
 - ▶ Alternate modes of private sector involvement are gaining traction in the highways sector. NHAI raised INR10,200 crore by issuing InvITs in December 2022
 - ▶ The Hybrid Annuity Model was another way of attracting private investors wherein the Government pays 40% of the project cost
 - ▶ Many HAM projects such as Munabao–Dhanana-Tanot Two Laning Road Project (NH-70), Salasar–Nagaur Two Laning Road Project (NH-65) (Package II) and Tuljapur–Ausa Four Laning Road Project (NH-361), were completed before the scheduled completion date
- 
 - ▶ The NHAI project of Surat-Dahisar ran into cost overruns of 49% due to due to delay in handing over right of way that immensely impacted the project's economics
 - ▶ Surat-Dahisar project also saw a disagreement between the parties for revenue sharing of toll fee
 - ▶ Regional protests on many highways that lead to deviation of traffic has caused weak toll collection in various national highways of India



²³ Indian Journal of Finance and Banking, <https://www.cribfb.com/journal/index.php/ijfb/article/view/693>; THE HYBRID ANNUITY MODEL FOR PUBLIC-PRIVATE PARTNERSHIPS IN INDIA’S ROAD SECTOR, ADB, <https://www.adb.org/sites/default/files/publication/820206/sawp-094-ham-ppps-india-road-sector.pdf>

Urban public transport – metro rail

India’s metro rail network has seen an incredible growth from 2014. It started from a network spread across five cities and 229 km and has grown to 860 km across 20 cities in April 2023²⁴.



Majority of the metro rail projects are financed by the central government (in the form of Equity, Subordinate

Debt, Pass Through Assistance, Grant, etc.) in collaboration with state governments on their own or in partnership with private players. In a step towards increased private participation, Metro Rail Policy 2017 mandates the involvement of PPP in some form of a metro project such as for implementation/operation and maintenance and fare collection²⁵.

How is the model working out for metro rail?

Current PPP projects	Opportunity avenues for PPP
Pune Metro Line III has been one of the recent under construction projects on PPP mode, spanning 23.33 kms	Gujarat Metro Rail Corporation plans Metro rail systems in Vadodara, Rajkot, Bhavnagar and Jamnagar as Detailed Project Reports (DPR) have been developed for these cities
Hyderabad Metro’s three lines was another project done under PPP mode, which was valued at US\$4 billion, being one of the world’s largest PPP projects in Metro sector	Delhi Metro awarded a 15-year PPP contract for lift and escalator maintenance for three corridors. Similar model can be adopted by other metro projects to involve private sector
The Phase IV expansion of the Delhi Metro expected to be completed by 2024 includes the development of new lines, extensions, and connectivity to the outskirts of the city	The feasibility of Metro lines is under review in the city of Chandigarh and PPP modes are being explored by the government, either for complete provisioning of the project or some unbundled services
Bangalore Metro’s phase II includes extensions of existing lines and the addition of new lines. Of the estimated project cost of INR9,616.51 crore, about INR800 crore will come from PPP involvement	The extension of Bangalore’s Metro line has many phases with projects ending in 2027. This will present opportunity for more PPP involvement in different phases

How is private participation working out for metro rail²⁶?

	<ul style="list-style-type: none">▶ Unbundling of metro services, such as different contracts for operations of tracks or maintenance of lifts, can be an avenue for private players to maintain profitability and Delhi Metro has recently awarded a contract to a private entity for the maintenance of lifts and escalators for three corridors
	<ul style="list-style-type: none">▶ High approval time for projects ranging from two to three years▶ The concessionaire for Mumbai Metro rail received delayed Right of Way to complete the construction, leading to a 39-month project delay▶ Hyderabad’s Metro rail also faced land acquisition and approval delays, raising the project cost by INR3,000 crore

²⁴ Enhancing Urban Mobility: India’s Metro Rail Transformation, <https://pib.gov.in/PressReleasePage.aspx?PRID=1926371>
²⁵ Project may be implemented in PPP mode, The Times of India, accessed via Factiva; Johnson Lifts Private Limited; Design, Manufacturing, Supply, Installation, Testing And Commissioning Of Lifts And Escalators In Delhi, Projects Tiger, accessed via Factiva; Rs 2,500 crore for Metro rail expansion in Hyderabad, Indo-Asian News Service, accessed via Factiva; Project may be implemented in PPP mode, The Times of India, accessed via Factiva; DMRC to develop Metro Phase IV on PPP model, <https://www.99acres.com/articles/dmrc-to-develop-metro-phase-iv-on-ppp-model-nid.html>; Bengaluru Metro Expansion: Phase 2, 2B, Purple Line, Green Line, and Future Plans, <https://www.metrotrainnews.in/bengaluru-metro-expansion-phase-2-2b-purple-line-green-line-and-future-plans/>; Metro rail policy Ahmedabad metro, <https://www.gujaratmetrorail.com/wp-content/uploads/2020/08/Phase-II-DPR-Latest-March-2019-.pdf>; Gujarat: Vadodara, Rajkot, Bhavnagar And Jamnagar To Get Metro Rail, DPR By Year-End, <https://swarajyamaq.com/infrastructure/gharar-vadodara-rajkot-bhavnagar-and-jamnagar-to-get-metro-rail-dpr-by-year-end>
²⁶ Indian Journal of Finance and Banking, <https://www.cribfb.com/journal/index.php/ijfb/article/view/693>; HMR project escalates by Rs 2,500-3000 cr, United News of India, accessed via Factiva

Logistics parks



The logistics sector in India is expected to grow from US\$250 billion in 2021 to US\$380 billion in 2025, backed by the government’s push under its National Logistics Policy (NLP), 2022. It targets to enhance the efficiency of logistics sector in India by enabling efficient inter-modal freight movement, providing efficient warehousing, improving traceability of consignments, and reducing freight costs and time.

Indian Government aims to reduce logistics costs from 13% to 9% of GDP by 2024²⁷, which will be driven by the expansion of infrastructure. The development of Multimodal Logistics Parks (MMLPs) is a key initiative in this direction. Indian government is progressing quickly on developing the MMLPs in the country, with the first four PPP projects already being awarded. All the MMLPs will be built on the Design, Finance, Build-Operate-Transfer (DFBOT) mode²⁸.

How is the model working out for logistics parks?

Current PPP projects	Opportunity avenues for PPP
Ministry of road transport & highways (MoRTH) awarded the country’s first PPP contract for a Multimodal Logistics Park (MMLP) located in Chennai, with estimated cost of INR1,424 crore	35 MMLPs to be developed under PPP on Design, Finance, Build-Operate-Transfer mode, of which 15 will be prioritized in the short term
Agreement signed with private player for construction India’s largest MMLP in Bengaluru. Indore MMLP with cost of INR1,110 crore and Nagpur MMLP with INR920 crore cost awarded to private sector players	Bidding of around 6-7 MMLPs will be done in FY24, with each involving private investments of over INR700-1,000 crore

How is private participation working out for logistics parks?

	<ul style="list-style-type: none">▶ Government is providing the land and connecting infrastructure (railway track and road) to the PPP developers, where PPP developer only has to incur the capital cost of the development.▶ Strong push by the government on developing complementary infrastructure such as Dedicated Freight Corridors for freight, Bharatmala for road connectivity
	<ul style="list-style-type: none">▶ The size of land parcels on concluded bids are very large, which requires high capital outflow for private developers. This has resulted in muted interest in MMLP bids so far▶ Private players also feel that the concession period of 45 years is low for projects of such scale

²⁷ Govt aims to bring down logistics cost to 9% by 2024: Gadkari, The Mint, Accessed via Factiva
²⁸ On target: Auction of 6-7 multi-modal logistics parks, Economic Times, Accessed via Factiva

Railways

Railways remains a key strategic sector in the country and is amongst the largest employers in the world. The National Monetization Pipeline (NMP) includes ambitious plans to privatize railway assets. The sector accounts for the second-largest share of 25% in the NMP with a total targeted value of INR1.52 lakh crore. It is aimed at raising the significant capital required to address the capacity constraints.

Asset monetization remains the focus area for the government to attract private investment. Apart from this, it has not outlined any major plans to involve private players in the sector.

The sector’s progress in monetization has been weak, with the government falling short of its FY23 target²⁹. The station redevelopment projects proposed to be implemented under the PPP mode are also being undertaken through the engineering, procurement, and construction (EPC) route. Indian railways planned to run private passenger trains in the country, however, the plan is put on a back burner due to a lack of interest from the private sector players³⁰.

Railway real estate investment trusts (REITs) is also being explored as a potential option for asset monetization by offering surplus land assets in parcels to domestic and foreign investors³¹.

How is the model working out for railways?

Current PPP projects	Opportunity avenues for PPP
<p>Railway assets worth INR 30,000 crore were monetized in FY23</p>	<p>Government has outlined monetization plans for many avenues, including 400 railway stations, 90 private passenger trains, 265 railway owned goods-sheds, dedicated freight corridor spanning 637 km and selected railway colonies between FY21-25</p>
<p>Indian railways launched Delhi-Lucknow Tejas Express, its first train with a private operator, in 2019 and another Tejas express with private operator in 2020. First Bharat Gaurav train with private sector operator, was flagged off in 2020</p>	<p>The asset monetization target of Indian railways for FY24 is INR44,907 crore and INR32,557 crore for FY25</p>

How is private participation working out for railways?

- 
 - Indian Railways is looking for select opportunities to attract private participation to ensure technology adoption and absorbing them in their design process
- 
 - There is low enthusiasm from private sector investors for the railways sector
 - The model needs to establish a regulatory authority that defines the role of private investors, the risks involved and provide an equitable allocation of project control
 - Railway projects are very capital-intensive and involve long gestation periods

²⁹ Indian Railways unlikely to meet Rs 1.52 lakh crore asset monetisation target, Deccan Herald, Accessed via Factiva
³⁰ No proposals under consideration for running passenger trains by private operators: Railways inform parliament, The Economic Times, Accessed via Factiva
³¹ Railways plans REITs route to monetize surplus land assets, Mint, Accessed via Factiva



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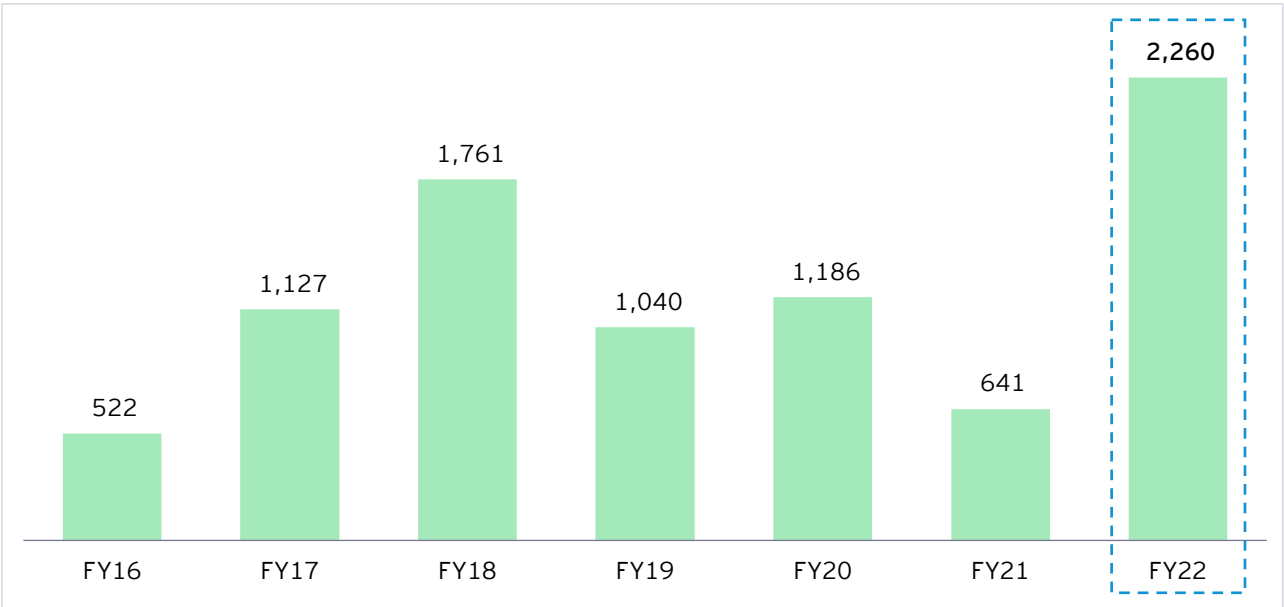
Foreign investments
in transport infrastructure

Foreign investments in transport infrastructure

Policy reforms in Foreign Direct Investment (FDI), investment facilitation and the introduction of alternate funding routes have resulted in increased FDI inflows into India. Moreover, Indian government has structured programs such as PM Gati Shakti, National logistics policy etc., which are likely to encourage more foreign investors.

The total FDI equity flows into the sector increased by more than 4x from FY2016 to FY2022 (after slowing down from FY19-21 around COVID period). The investment increased at a compound annual growth rate (CAGR) of 27% from US\$522 million in FY2016 to US\$2.3 billion in FY2022. Ports and waterways witnessed the highest growth across these years, while roads and highways received the maximum inflow³².

Exhibit 6: FDI equity investments in India's transport sector from FY16 to FY22 (US\$ million)



Source: India Transportation Sector Report 2023-2024, EMIS report

Since 2016, the EIB has invested EUR2.45 billion in transport sector of India.

Cumulative commitments of ADB in India are US\$59.7 billion (project and technical assistance). Of which, about 34% are in transport sector.

Foreign investments in terms of loans from Multilateral Development Banks, such as the European Investment Bank (EIB) also form a major source of funding for the Indian transport sector. Outside Europe, India is the largest beneficiary of EIB transport financing. The Asian Development Bank (ADB) has invested in many transport projects in India³³.

³² India Transportation Sector Report 2023-2024, EMIS report
³³ ADB India overview, <https://www.adb.org/where-we-work/india/overview>; India: EIB confirms €150 million backing for Pune metro network, eib.org

Key highlights – foreign investments in the transport sector³⁴

India continues to offer attractive risk-adjusted returns to foreign investors across all asset classes. All the transport sectors have witnessed foreign investment in

one form or the other and several foreign investors have scaled up their investments at the backs of India’s growth story.



Ports

- ▶ Leading international port operator is investing US\$510 million for a new container terminal in Kandla Port, Gujarat. The terminal will be built on a Built-Operate-Transfer (BOT) basis
- ▶ The operator already operates five other cargo terminals in the country, handling 28% of total cargo volume of India
- ▶ Japan-based leading aid agency and the Asian Development Bank is financing a 30-year PPP concession with an Indian and a French shipping company to refurbish, operate and maintain Jawaharlal Nehru Port Container Terminal (JNPCT) in January 2023, with a combined investment of US\$131 million



Airports

- ▶ The government’s plan to invest US\$12 billion in building greenfield airports, renovation of existing facilities and new terminals, will see around US\$9 billion from private investors including foreign investors
- ▶ Large French airport operator acquired 49% stake in a leading Indian airports operator for INR10,780 crore, giving the foreign operator access to Delhi, Hyderabad and Mopa airports
- ▶ Large Canada-based financial holding company has a 57% stake in Bangalore International Airport Limited (BIAL), after it acquired an additional 3% stake this year from another foreign investor



Roads and highways

- ▶ Foreign state-owned investors have made direct investments of US\$6.6 billion in India’s highways
- ▶ Many foreign investors have also made investments through the National Investment and Infrastructure Fund
- ▶ A Singapore-based investment company that holds 18 highways has the biggest portfolio of toll roads in India
- ▶ Two Canadian pension funds invested US\$816 million in an InvIT, to acquire road assets earlier this year



Urban public transport – Metro rail

- ▶ In India’s Metro rails, foreign investments have mainly been in the form of financial loans with flexible arrangements
- ▶ EIB has granted US\$540 million loan for the Lucknow Metro
- ▶ The Asian Infrastructure Investment Bank will invest in six metro projects in India through a US\$1.5 billion loan
- ▶ Japan-based leading aid agency was the primary funding authority of Phase 1,2 and 3 of Delhi Metro

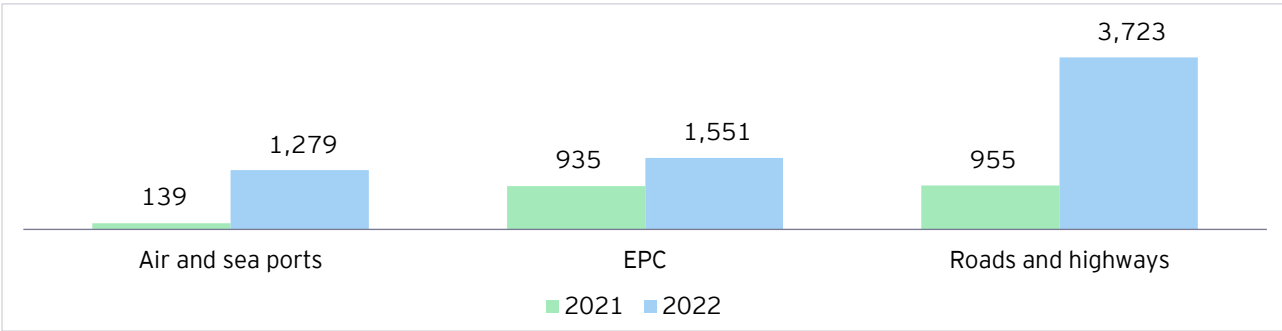
³⁴ Dubai’s DP World to invest \$ 510 million in India’s Gujarat state, Reuters News, accessed via Factiva; India to splurge \$ 12 billion over next two years on airports as travel rebounds, Bloomberg, accessed via Factiva; India’s Bargain Roads Sell-Off Will Draw SWFs, <https://globalswf.com/news/india-s-bargain-roads-sell-off-will-drawn-swfs>; India’s metro rail projects see rising foreign aid, <https://indbiz.gov.in/indias-metro-rail-projects-see-rising-foreign-aid/#:~:text=Meanwhile%2C%20Luxembourg%2Dbased%20EIB%20has,new%20metro%20projects%20in%20India>; GMR Group concludes deal with Groupe ADP for 49% stake sale in airport arm, Livemint, accessed via Factiva; Supporting Jawaharlal Nehru Port Container Terminal Expansion in Maharashtra through JICA-funded "LEAP" (Private Sector Investment Finance), <https://www.jica.go.jp/Resource/india/english/office/topics/press230120.html>; Fairfax India acquires additional 3% stake in Bengaluru airport operator BIAL, The Hindu accessed via Factiva

Role of Private Equity in the transport sector

Private equity (PE) investors are witnessing a substantial influx of potential deals across core infrastructure sectors like roads, ports, and airports, underscoring a vibrant and dynamic investment

environment. This is leading to the development of many yield generating assets that are forming a part of a lucrative investment pipeline for PE/VC investors³⁵.

Exhibit 7: PE/VC investment trends in select transport sectors (value in US\$ million)



Note: EPC stands for Engineering, Procurement and Construction
Source: PE/VC agenda, India Trend Book 2023, EY India

In 2022, 41% of all PE/VC investments in the infrastructure were in the roads and highway sector aggregating to US\$3.7 billion. The government’s initiatives of building greenfield airports should attract PE funding the sector in the coming years. PE/VC

funds continue to prioritize major transport sectors as a key area of focus, especially under the high interest rate regime where steady, cashflow generating real assets find more allocation in investor portfolios.



³⁵ PE/VC roundup October 2023, EY India

Recent PE deals* in the transport sector³⁶

1

An India-based PE investor acquired eight road projects (100% stake) for US\$886 million in 2022

2

A London-based PE investor acquired six operating highway toll road projects (100%) stake for US\$775 million in 2022

3

A Canada-based PE investor acquired Eastern Peripheral Expressway (100% stake) for US\$774 million in 2022

4

Singapore-based sovereign wealth fund and an Asia-based logistics platform invested US\$600 million to form a joint venture to acquire various logistics assets in 2022

5

An Indian Fund acquired a 100% stake in an expressway SPV in Jammu & Kashmir for US\$377 million in 2022

6

A US-based PE investor provided private debt to Mumbai Airport (MIAL) for US\$750 million in 2022

7

Two Canada-based pension fund acquired 50% stake in NHAI InvIT for US\$537 million in 2021

8

A Spain-based Engineering & Construction company and a Singapore-based fund acquired 42% stake in a listed Indian highway construction firm for US\$712 million in 2021

9

A Singapore-based financial services company acquired nine Toll-Operate-Transfer (TOT) of NHAI for US\$716 million in 2019

10

A Singapore-based financial services company acquired the longest road tunnel for US\$527 million in 2020

*Not exhaustive

Recent PE exits* in the transport sector³⁷

In 2022, the infrastructure sector recorded the highest value of exits at US\$3.6 billion, accounting for two-thirds of all strategic exits by value, comprising

primarily of assets in the roads and renewables segment.

1

A Canada-based PE entity sold Five Road Projects (Simhapuri Expressway, Rayalseema Expressway, Mumbai Nasik Expressway, Kosi Bridge Infrastructure, Gorakhpur Infrastructure) for US\$1,200 million in 2022

2

A US-based PE entity sold a 32% stake in an Indian port for US\$761 million in 2021. The deal had a P/E multiple of 12.0x (as per FY20 figures)

*Not exhaustive

Many PE deals recently in the roads and highways sector have been towards investment in Infrastructure Investment Trusts or InvITs. InvITs are an emerging financial instrument for the transport sector due to their favourable tax structure and the access to liquidity since they are listed on stock exchanges. InvITs accounted for 16% of PE/VC investments in the infrastructure sector since 2018. Investments in InvITs

are expected to grow further as more assets get developed, as it is a good means for rotating capital for government and corporate asset owners alike³⁸.

InvITs are a part of Indian government's National Monetization Plan to monetize its road projects. The success of two rounds of National Highway Authority of India's (NHAI) InvITs has led the plan of two more fund-raising rounds.

³⁶ PE/VC roundup October 2023, EY India; EY PE/VC trends book 2022; Monthly PE/VC Roundup November 2022; EY PE/VC trends book 2023; Highways Infrastructure Trust acquires 4 Road Assets worth Rs 30 bn, <https://www.constructionworld.in/transport-infrastructure/highways-and-roads-infrastructure/highways-infrastructure-trust-acquires-4-road-assets-worth-rs-30-bn-/42831>
³⁷ PE/VC roundup October 2023, EY India; Adani ports to acquire 31.5% in Gangavaram port from Warburg Pincus, <https://warburgpincus.com/2021/03/03/adani-ports-to-acquire-31-5-in-gangavaram-port-from-warburg-pincus-for-rs1954-cr-all-india-market-share-rises-to-30/>
³⁸ PE/VC roundup October 2023, EY India; Highways Infrastructure Trust acquires 4 Road Assets worth Rs 30 bn, <https://www.constructionworld.in/transport-infrastructure/highways-and-roads-infrastructure/highways-infrastructure-trust-acquires-4-road-assets-worth-rs-30-bn-/42831>

Timeline of NHAI's InvIT



Source: <https://pib.gov.in/PressReleaseframePage.aspx?PRID=1867211>; <https://infra.economictimes.indiatimes.com/news/roads-highways/nhai-targets-rs-10000-crore-in-third-round-of-asset-monetisation-through-inv-it-in-february/95167068>; <https://www.livemint.com/news/india/nhais-inv-it-to-raise-9-000-cr-11698604176974.html>;

A leading US-based financial services firm came out with a first road and highways InvIT, holding 89.99% stake and the rest owned by a large pension fund. The InvIT recently acquired four road assets for INR3,000 crore. At present the InvIT holds a portfolio of six road assets across Gujarat, Meghalaya, Tamil Nadu, Madhya Pradesh, Rajasthan and Telangana.

InvITs have the potential to unlock additional funding for all the transport sectors. After the success of roads and highways InvITs, the government is considering

them for ports as well. This financial instrument serves as a testimony to the government's efforts in considering the investor's interest at the core.



4

Sustainable infrastructure -

India's path to a
resilient future

Sustainable infrastructure - India's path to a resilient future

India has the target of ensuring net-zero emissions by 2070 and 45% reduction in emission intensity of its GDP by 2030. The transportation sector remains a significant contributor to carbon emissions in the country, with around 14% share in greenhouse gas (GHG) emissions³⁹. The massive implications of the sector on the climate makes it imperative to embrace sustainable practices. The government will need to emphasize on developing a low-carbon and sustainable transportation sector to continue its development trajectory while balancing the pledged climate goals.

The transportation sector has been embracing various green initiatives such as electrification, installation of renewable energy sources, waste management, and carbon neutrality targets, etc. to reduce and mitigate environment footprint. Tools such as GHG emissions calculator and Unified Logistics Interface Platform have been introduced to track and measure emissions, in addition to introducing policies such as Green Highway Policy and Harit Sagar, to promote sustainability initiatives.⁴⁰

Key sustainability initiatives shaping the future of transport sector in India⁴¹



Logistics

- ▶ National Logistics Policy (NLP) 2022 introduces various actions towards sustainability in logistics:
 - ▶ Development of design standards for sustainable packaging by various government departments
 - ▶ Promoting sustainability in supply chain through renewable power
 - ▶ Provision of recycling units, waste flow management and material flow optimization, basis global best practices
- ▶ Increased freight movement by large trucks and rail at multi-modal logistics parks (MMLPs) will enable around 12% emission reductions for top 15 nodes
- ▶ Development of GHG calculator to promote sustainability in freight



Metro

- ▶ Around 10 green stations on Mumbai Metro Line 7 awarded platinum rating by the Indian Green Building Council for compliance with sustainability measures
- ▶ Chennai Metro Rail Limited received International Green World Award for its eco-friendly initiatives
- ▶ Lucknow Metro is the first metro in the country with 100% LED lighting in trains and stations
- ▶ Delhi Metro Rail Corporation's target to generate 50% energy from renewables by 2031.
- ▶ Regional Rapid Transit System's (RRTS) target to fulfil 70% energy requirements of Delhi-Ghaziabad-Meerut corridor through solar energy

³⁹ Envisioning the future of Indian organization@2047, EY

⁴⁰ Envisioning the future of Indian planning@2047, EY Road, renewables capex likely to rise by 35% in FY24 & FY25, Economic Times

⁴¹ India constructed 703 km of highways using plastic waste, Sarkaritel, Accessed via Factiva; India's Ports Set Sights on Green Hydrogen Future, EnergyNews

Govt maps sustainable route to highway building: Gadkari, Mint, Accessed via Factiva

National Highway Pre-cast Concrete Policy, PIB; GMIS, 2023 sails India into the Green Sustainability Transportation, <https://pib.gov.in/PressReleasePage.aspx?PRID=1968884>

66 Indian Airports are operating on 100% Green Energy, PIB

121 airports to be made carbon neutral by 2025: Scindia, Press Trust of India, Accessed via Factiva

SUGAM Sustainable Green Airports Mission, Airports Authority of India

India aims at becoming 'Global Hub for Green Ship' building by 2030 with launch of Green Tug Transition Programme(GTTP): Shri Sarbananda Sonowal, PIB

Press Release: Advanced Regenerative Braking System in Vande Bharat Express - A New Dimension in Energy Saving, Indian Railways

Indian Railways has adopted an integrated approach for a Green Environment, PIB

Faulty bio-toilet in Rajdhani express raises stink for railways, The Hindustan Times, Accessed via Factiva

Envisioning the future of Indian logistics@2047, EY India

National Logistics Policy 2022, DPIIT

Elevated plans: Delhi Metro eyes solar share of 50% in 8 years, The Times of India, Accessed via Factiva

10 'green stations' of Mumbai Metro-7 win top Platinum Rating of IGBC, IANS, Accessed via Factiva

Chennai Metro Rail Limited bags Gold in Green Apple Awards 2023 under the Carbon Reduction category, Chennai Metro Rail Limited

Lucknow Metro: A Cut Above the Rest, egov, Accessed via Factiva



Ports

- ▶ At Global Maritime India Summit 2023, 70 MoUs were signed on sustainable development, with INR2.37 lakh crore investment
- ▶ Launch of 'Harit Sagar' guidelines for sustainable port development
- ▶ Target of covering all 12 major ports with green hydrogen bunkering by 2035
- ▶ At least 60% energy need for all ports to be met through renewables by 2030, and 90% by 2047.
- ▶ Over 50% electrification of all ports' equipment by 2030 and 90% by 2047
- ▶ Ensuring adequate electric vehicle (EV) charging stations in port campus by 2025
- ▶ Reduction of 30% carbon emissions per ton of cargo handled by 2030
- ▶ Identified Paradip Port, Deendayal Port (DP) and V.O. Chidambaram Port for development as Hydrogen Hubs by 2030. DP to invest ~INR700 crore on green hydrogen parks and Chidambaram port INR52,000 crore on green hydrogen and ammonia production
- ▶ Target to become global Green Ship building hub and convert 50% of Tugs to Green Tugs by 2030



Roads and highways

- ▶ As of July 2021, India had constructed 703 km of highways using waste plastic
- ▶ 1% of the highway construction cost is to be set aside for planting trees
- ▶ Planting of 3.8 crore tress along national highways (as of August 2023), under the Green Highway Policy 2015
- ▶ At least 25% precast materials use in national highways and expressways to ensure reliability and reduce emissions
- ▶ INR65,000 crore 'Delhi Decongestion Plan' to make the capital's roads dust-free and improve drainage systems around roads
- ▶ Installation of world's first bamboo crash barriers (alternative to steel) along 200-metres section on Vani-Warora highway in Maharashtra



Railways

- ▶ Target to become net-zero by 2030 through electrification of all tracks
- ▶ Use of 5% biofuels blending in traction diesel fuel
- ▶ Improving water use efficiency by around 20% by 2030
- ▶ Afforestation to create additional carbon sinks. Indian railways had planted 72 lakh saplings during 2021-22.
- ▶ Allocation of 1% cost in all sanctioned activities, towards environment-related works
- ▶ Installing environment-friendly bio-toilets in passenger coaches. More than 2.5 lakh bio-toilets were installed till 2021, with spending of INR1,500 crore
- ▶ Installation of Advanced Regenerative Braking System in Vande Bharat express to save around 30% of electricity



Airports

- ▶ A total of 66 Indian airports running entirely on green energy. AAI targets running all airports on renewable energy by 2024
- ▶ Standardisation of the Carbon Accounting and Reporting framework of Indian Airports
- ▶ Carbon-neutral target for scope 1 and 2 emissions of all AAI managed airports by 2027 and net-zero target for 2030
- ▶ Carbon-neutral status and level 4+ and higher accreditation from the Airports International Council (ACI) for airports such as Delhi, Mumbai, Hyderabad, and Bengaluru
- ▶ Launch of the Sustainable Green Airports Mission (SUGAM) booklet to show energy efficiency initiatives at AAI-operated airports



The government is moving towards various environmentally sustainable practices but there is still a long way to go. It will need to embrace eco-friendly technologies, invest more in renewable energy, and prioritize sustainable development to not only contribute to the country's climate goals but also unlock new opportunities for growth and innovation in the sector.

Private sector investments in green projects are a necessity, driven by the demand for sector expertise, technological advancements, and access to patents. Public and private collaboration can invest in digital tools, data analytics and ensure information sharing on all projects to capture quantitative data, KPIs and develop sustainability scorecards. The transport sector has a critical role to play but needs to be better incentivized to play its part.





5

Key
recommendations
for private investors

Key recommendations for private investors

India will present an investment opportunity of approximately US\$39 billion. This includes projects that will be executed under the PPP mode with investments of about US\$15.3 billion as well as those where the mode of development is yet to be finalized.

PPP projects account for a sizeable share of about 40% in the value of these opportunities, presenting a significant chance for the investors to participate in the sector.

Exhibit 8: Upcoming transport infrastructure project opportunities for PPPs

Sectors	No. of upcoming projects	Total value of projects (US\$ billion)
Roads and highways	59	6.7
Logistics	37	5.0
Urban public transport	9	2.1
Railways	5	1.2
Airports and aviation	6	0.3
Inland waterways	1	0.04

Notes: Includes opportunities under conceptualization stage only. Includes projects with construction mode as PPP, To be finalise and Others.
Others has been calculated by subtracting total opportunities under three modes (PPP, EPC, To be finalised) from the overall sector numbers. Further break-up of opportunities under this category is not available. The data includes opportunites from both State and Central governments.
Break-up of opportunities for Shipping is not available.
Source: India Investment Grid (IIG)

The government has brought in several initiatives to attract private sector investments particularly in the areas of ease of doing business and mitigating risks in PPP frameworks.

Policy

- ▶ Adoption of a liberal FDI policy to attract foreign investments with majority of transport sectors open to 100% FDI. The government also undertakes a periodic review of the FDI policy to ensure that it remains investor friendly.
- ▶ Setting up of the digital Pro-Active Governance and Timely Implementation (PRAGATI) initiative to fast-track regulatory approval process for major projects.
- ▶ Well-developed framework for Public-Private-Partnerships (PPP) in the highway sector. The Asian Development Bank has ranked India as the first spot in PPP operational maturity and has designated India as a developed market for PPPs.⁴²
- ▶ Increasing the concession period for projects to reduce the risk for private players.

Tax incentives

- ▶ 100% Income Tax exemption in any consecutive 10-year period out of 20 years of operations for road construction projects.⁴³

Systems and processes

- ▶ Gati Shakti Master Plan to integrate 16 different ministries to integrate planning and execution of infrastructure projects and fast track clearances.
- ▶ Implementing single window clearance (NSWS) to streamline process for obtaining regulatory approvals and clearances on a single portal, before starting a new business.⁴⁴
- ▶ Online submission of documents, digital approvals, and project monitoring through online platforms contribute to faster clearances.
- ▶ The Insolvent and Bankruptcy Code (IBC) has created a comprehensive and uniform process for insolvency resolution for all companies and partnerships.
- ▶ Facilitating the ease of exit for business by setting up of Centre for Processing Accelerated Corporate

⁴² Envisioning the Future of Indian Logistics@2047, EY India
⁴³ Envisioning the Future of Indian Logistics@2047, EY India
⁴⁴ Advisory For National Single Window System (NSWS), ICEGATE, GOI

Exit (C-PACE), a dedicated facility to speed up the voluntary closure of companies.⁴⁵

Investment models

- ▶ Government has introduced InvITs to facilitate the monetization of completed and revenue-generating infrastructure projects.
- ▶ Monetization of assets to involve the private sector in the operation and maintenance of existing infrastructure assets, the government

aims to generate funds for new projects and improve overall efficiency. This also allows private sector to pick-up smaller projects in these sectors.

- ▶ In capital intensive projects such as logistics parks, the government is providing land at free of cost along with basic rail/road connectivity.

While we saw significant growth in private sector investments across sectors, there also have been cases of stressed assets where private players faced challenges:

Overestimation of traffic potential

There have been several road projects in NCR region, where the developers faced financial distress primarily due to lower-than-anticipated traffic. The toll collection was not enough to meet the debt obligations, leading to financial strain on the project

Aggressive bidding for a port asset

The subject port asset filed for insolvency proceedings after the developer defaulted on loans of INR2,977 crore from different creditors. The revenue sharing pact and the low lease charge were some of the reasons cited later for the default

Delays in project clearances

A large infrastructure company encountered financial difficulties in some of its road projects. The challenges included funding constraints owing to delays, and issues related to obtaining necessary clearances

Revenue shortfall and high debt

A large airport operator faced financial constraints including high debt and losses from its airport projects. Efforts have been made to reduce debt through divestment and restructuring

It is important that the private sector undertake projects after careful evaluation that minimizes the risk

of stranded or unviable infra projects. We recommend the following steps for private investors:

Exhibit 9: What can private players do to make the most out of the growth potential of transport and logistics sector and a supportive policy environment?



⁴⁵ Centre for Processing Accelerated Corporate Exit (C-PACE) established for providing hassle-free filing, timely and process-bound striking off companies from MCA Register, PIB

Reasonable bidding rationale after a detailed due diligence process:

- 1) Every sector has a different gestation period for projects. Private players should ensure the selected sector is right for them.
- 2) Evaluate the project costs, timeline and overall viability.

Low-cost Project financing:

Private investors should prioritize securing cost-effective financing to enhance project feasibility and sustainability.

- 1) Players can bid for low-risk brownfield projects where the capital requirements are lesser and there is a steady cashflow right from the beginning.
- 2) Raise low-cost financing to reduce interest burden during construction and initial years. Ex: Multilateral banks, Infra lending by Indian banks etc.

Management of stakeholders and local communities:

It is important for private players to ensure stakeholders are well managed and local communities are kept in confidence, otherwise it can eventually

lead to project delays and disputes. Local partners would provide regional knowledge and manage stakeholders better.

Form technical partnerships:

It is imperative for private players to bring in new technology and improve project quality:

- 1) Technical partners for best-in-class design and EPC capabilities to keep a check on timeline, cost and quality of development. Ex: Bullet trains/ High-speed trains require such partnerships.
- 2) Sustainability partners to achieve green goals and ensure business continuity.

Distributed risk sharing through contractual arrangements:

There must be a balanced risk-sharing mechanism between the private investor and the government which will eventually avoid disputes and lead to project success.

There are a few successful metro projects which emphasize transparent and equitable risk-sharing agreements to enhance project viability.

An enabling environment coming together with diligent private investors would accelerate the growth of transport infrastructure, which will then propel India towards the goal of US\$5 trillion economy.

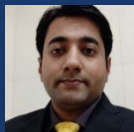
Over the last ten years, India has strategically enabled private investments for transport infrastructure through its positive reinforcements, which has also reflected in India's improved ease of doing business ranking. The country will present an investment opportunity of approximately US\$39 billion in key transport sectors in the next few years and the role of private sector becomes crucial to accelerate infrastructure development and achieve the country's economic goals.

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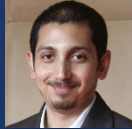


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