

Research Report on Road Toll, Infrastructure EPC & Real Estate Industry in India

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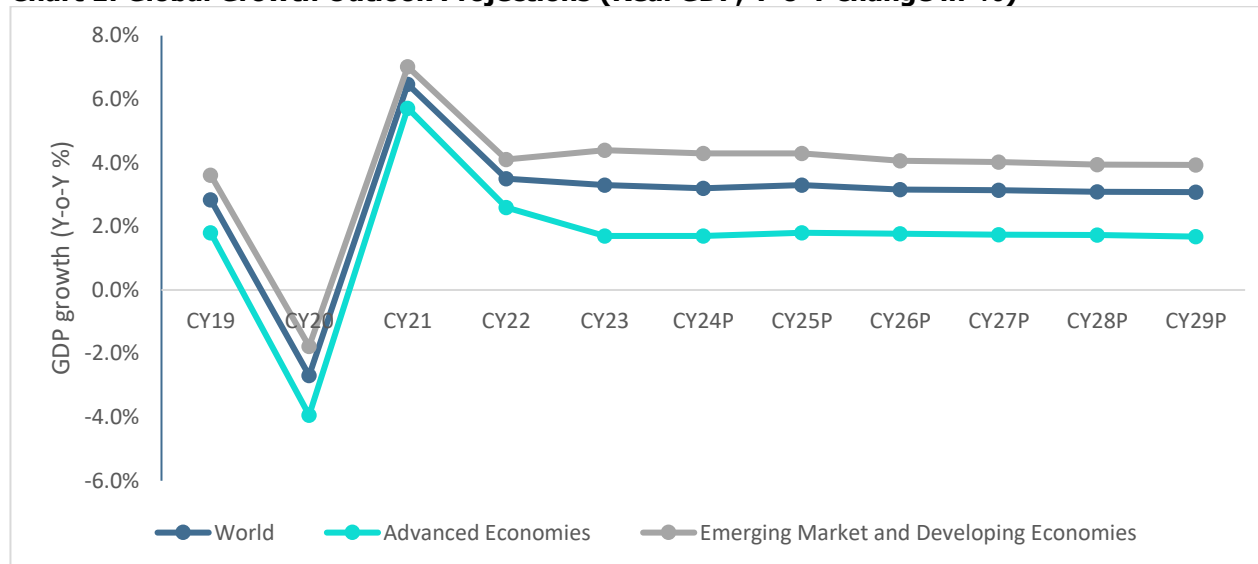
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1. Economic Outlook

1.1 Global Economy

Global growth, which stood at 3.3% in CY23, is anticipated to fall to 3.2% in CY24 and then bounce back again to 3.3% in CY25. The CY24 forecast has remained same compared to the April 2024 World Economic Outlook (WEO) Update, and increased by 0.1 percentage point compared to the January 2024 WEO. Despite this, the expansion remains historically low, attributed to factors including sustained high borrowing costs, inflation woes, reduced fiscal support, lingering effects of Russia’s Ukraine invasion, Iran–Israel Cold War, sluggish productivity growth, and heightened geo-economic fragmentation.

Chart 1: Global Growth Outlook Projections (Real GDP, Y-o-Y change in %)



Notes: P-Projection; Source: IMF – World Economic Outlook, July 2024

Table 1: GDP growth trend comparison - India v/s Other Economies (Real GDP, Y-o-Y change in %)

	Real GDP (Y-o-Y change in %)									
	CY20	CY21	CY22	CY23	CY24P	CY25P	CY26P	CY27P	CY28P	CY29P
India	-5.8	9.7	7.0	8.2	7.0	6.5	6.5	6.5	6.5	6.5
China	2.2	8.5	3.0	5.2	5.0	4.5	3.8	3.6	3.4	3.3
Indonesia	-2.1	3.7	5.3	5.0	5.0	5.1	5.1	5.1	5.1	5.1
Saudi Arabia	-3.6	5.1	7.5	-0.8	1.7	4.7	4.0	3.5	3.0	3.5
Brazil	-3.3	4.8	3.0	2.9	2.1	2.4	2.1	2.0	2.0	2.0
Euro Area	-6.1	5.9	3.4	0.5	0.9	1.5	1.4	1.3	1.3	1.2
United States	-2.2	5.8	1.9	2.5	2.6	1.9	2.0	2.1	2.1	2.1

P- Projections; Source: IMF- World Economic Outlook Database (July 2024)

Advanced Economies Group

Advanced economies are expected to experience a gradual increase in growth, remaining same at 1.7% in CY23 and CY24 and increasing to 1.8% in CY25. The projection for CY24 and CY25 remains unchanged compared to the April 2024 WEO Update.

The **United States** is expected to see growth rise to 2.6% in CY24, followed by a slight slowdown to 1.9% in CY25. This deceleration is attributed to gradual fiscal tightening and labor market softening, which dampen aggregate demand.

The CY24 projection has been revised downward by 0.1 percentage points since the April CY24 WEO Update. This revision primarily reflects carryover effects from stronger-than-expected growth in the fourth quarter of CY23, with some of this momentum expected to continue into CY24.

The **Euro Area's** growth is anticipated to rebound from its sluggish rate of 0.5% in CY23, mainly influenced by significant exposure to the conflict in Ukraine. Projections indicate an increase to 0.9% in CY24 and further to 1.5% in CY25. This recovery is driven by stronger household consumption, as the impact of elevated energy prices diminishes and declining inflation bolsters real income growth. Additionally, strong momentum in services, higher than expected net exports, and higher investments have further driven this growth. But, countries like Germany are expected to have a sluggish recovery on account of weak manufacturing growth.

Emerging Market and Developing Economies Group

Emerging market and developing economies are forecasted to maintain stable growth at 4.3% in both CY24 and CY25. This forecast has been revised upwards by 0.1 percentage point as compared to the April 2024 WEO update on account of stronger activity in Asia, particularly China and India. Growth prospects in economies across the Middle East and Central Asia continue to be weighed down by oil production and regional conflicts. Growth forecast of sub-Saharan Africa has also been revised downward on account of weak economic activity. Low-income developing countries are anticipated to experience a gradual growth uptick, starting at 3.9% in CY23 and climbing to 4.4% in CY24 and 5.3% in CY25, as certain constraints on near-term growth begin to ease.

The economic forecast for emerging and developing Asia reveals a modest deceleration in growth, with projections indicating a decline from 5.7% in CY23 to 5.4% in CY24 and 5.1% in CY25. **China's** trajectory reflects a slowdown, transitioning from 5.2% in CY23 to 5.0% in CY24 and 4.5% in CY25 due to fading post-pandemic stimuli and ongoing property sector challenges. In contrast, **India's** growth remains robust, with anticipated rates of 7.0% in CY24 and 6.5% in CY25, bolstered by resilient domestic demand and a burgeoning working-age populace.

The **Indonesian** economy is expected to register growth of 5.0% in CY24 and 5.1% in CY25 with a strong domestic demand, a healthy export performance, policy measures, and normalization in commodity prices. **Saudi Arabia's** growth slowed at -0.8% in CY23 attributed to lower oil production. CY24 is predicted to see a revamp in the growth rates to 1.7% on account of Vision 2030 reforms that helped advance the country's economic diversification agenda, including through reduced reliance on oil. The forecast for CY24 has been revised downward as compared to the April 2024 WEO update on account of extension of oil production cuts. Going forward, GDP is expected to grow at 4.7% and 4.0% in CY25 and CY26, respectively. On the other hand, **Brazil's** growth is projected to ease to 2.1% in CY24, driven by fiscal consolidation, the lingering impact of tight monetary policies, and reduced contributions from the agricultural sector. There has been a downward revision in forecast for CY24 compared to April 2024 WEO update on account of the near-term impact of flooding. Going forward, GDP is expected to grow at 2.4% in CY25 on account of reconstruction following the floods and supportive structural factors.

Despite the turmoil in the last 2-3 years, India bears good tidings to become a USD 5 trillion economy by CY27. According to the IMF dataset on Gross Domestic Product (GDP) at current prices, the nominal GDP has been at USD 3.6 trillion for CY23 and is projected to reach USD 5.3 trillion by CY27 and USD 6.4 trillion by CY29. India's expected GDP growth rate for coming years is almost double compared to the world economy.

Besides, India stands out as the fastest-growing economy among the major economies. The country is expected to grow at more than 6.5% in the period of CY24-CY29, outshining China's growth rate. By CY27, the Indian economy is estimated to emerge as the third-largest economy globally, hopping over Japan and Germany. Currently, it is the third-largest economy globally in terms of Purchasing Power Parity (PPP) with a ~7.6% share in the global economy, with China [~18.7%] on the top followed by the United States [~15.6%]. Purchasing Power Parity is an economic performance indicator denoting the relative price of an average basket of goods and services that a household needs for livelihood in each country.

Despite Covid-19's impact, high inflationary environment and interest rates globally, and the geopolitical tensions in Europe, India has been a major contributor to world economic growth. India is increasingly becoming an open economy as well through growing foreign trade. Despite the global inflation and uncertainties, Indian economy continues to show resilience. This resilience is mainly supported by stable financial sector backed by well-capitalized banks and export of services in trade balance. With this, the growth of Indian economy is expected to fare better than other economies majorly on account of strong investment activity bolstered by the government's capex push and buoyant private consumption, particularly among higher income earners.

1.2 Indian Economic Outlook

1.2.1 GDP Growth and Outlook

Resilience to External Shocks remains Critical for Near-Term Outlook

India's real GDP grew by 7.0% in FY23 and stood at ~Rs. 161 trillion, as per the First Revised Estimate, despite the pandemic in previous years and geopolitical Russia-Ukraine spillovers. In Q1FY24, the economic growth accelerated to 8.2%. The manufacturing sector maintained an encouraging pace of growth, given the favorable demand conditions and lower input prices. The growth was supplemented by a supportive base alongside robust services and construction activities. This momentum remained in the range in the Q2FY24 with GDP growth at 8.1%, mainly supported by acceleration in investments. However, private consumption growth was muted due to weak rural demand and some moderation in urban demand amid elevated inflationary pressures in Q2FY24. The GDP growth number improved for Q3FY24 at 8.6%.

India's GDP at constant prices surged to Rs. 47.24 trillion in Q4FY24 from Rs. 43.84 trillion in Q4FY23, marking a 7.8% growth rate. This upswing was fueled by robust performances in construction, mining & quarrying, utility services, and manufacturing sectors and investment drove the GDP growth, while both private and government consumption remained subdued.

Real GDP in the year FY24 is estimated to grow at 8.2% at Rs. 173.82 trillion as per provisional estimate of the Ministry of Statistics and Programme Implementation. It is expected that domestic demand, especially investment, to be the main driver of growth in India, amid sustained levels of business and consumer confidence.

GDP Growth Outlook

- Driven by fixed investment and improving global environment, domestic economic activity continues to expand. The provisional estimates (PE) placed real GDP growth at 8.2% for FY24.
- Industrial activity led by manufacturing continues its momentum on the back of strengthening domestic demand. Moreover, the services sector maintained buoyancy as could be observed by growth in high frequency indicators such as E-way bills, GST revenues, toll collections, aggregate, and a healthy growth in domestic air cargo and port cargo. The purchasing managers' index for both manufacturing and services continues to exhibit a sustained and healthy expansion.
- Domestic economic activity remains strong. On the supply side, the south-west monsoon is progressing well, with higher cumulative kharif sowing and improving reservoir levels, which bodes well for kharif output. The potential development of La Niña conditions in the latter half of the monsoon season could impact agricultural production in 2024-25. On the demand side, household consumption is bolstered by a recovery in rural demand and consistent discretionary spending in urban areas. Fixed investment activity is robust, supported by the government's ongoing focus on capital expenditure, healthy balance sheets of banks and corporates, and other policy measures. Private

corporate investment is picking up, driven by an increase in bank credit. Merchandise exports grew in June, albeit at a slower rate, while the growth in non-oil-non-gold imports accelerated, indicating resilience of domestic demand. Services exports saw double-digit growth in May 2024 before slowing down in June 2024.

- Improved agricultural activity would improve rural consumption, while urban consumption would be supported by buoyancy in services activity. Additionally, improvement in global trade prospects are expected to support external demand.

Persistent geopolitical tensions and volatility in international financial markets and geo-economic fragmentation do pose risk to this outlook. Based on these considerations, the RBI, in its August 2024 monetary policy, has projected real GDP growth at 7.2% y-o-y for FY25.

Table 2: RBI's GDP Growth Outlook (Y-o-Y %)

FY25P (complete year)	Q1FY25P	Q2FY25P	Q3FY25P	Q4FY25P	Q1FY26P
7.2%	7.1%	7.2%	7.3%	7.2%	7.2%

Note: P-Projected; Source: Reserve Bank of India

1.2.2 Gross Value Added (GVA)

Gross Value Added (GVA) is the measure of the value of goods and services produced in an economy. GVA gives a picture of the supply side whereas GDP represents consumption.

Industry and Services sector leading the recovery charge

- The gap between GDP and GVA growth turned positive in FY22 (after a gap of two years) due to robust tax collections. Of the three major sector heads, the service sector has been the fastest-growing sector in the last 5 years.
- The **agriculture sector** was holding growth momentum till FY18. In FY19, the acreage for the rabi crop was marginally lower than the previous year which affected the agricultural performance. Whereas FY20 witnessed growth on account of improved production. During the pandemic-impacted period of FY21, the agriculture sector was largely insulated as timely and proactive exemptions from COVID-induced lockdowns to the sector facilitated uninterrupted harvesting of rabi crops and sowing of kharif crops. However, supply chain disruptions impacted the flow of agricultural goods leading to high food inflation and adverse initial impact on some major agricultural exports. However, performance remained steady in FY22.

In FY23, the agriculture sector performed well despite weather-related disruptions, such as uneven monsoon and unseasonal rainfall, impacting yields of some major crops and clocked a growth of 4% y-o-y, garnering Rs. 22.3 trillion.

In Q1FY24, this sector expanded at a slower pace of 3.7% y-o-y growth compared to y-o-y growth a quarter ago. This further stumbled to 1.7% in Q2FY24. Further, it experienced y-o-y growth of 0.4% in Q3 and 0.6% in Q4. leading to expectations of a modest 1.4% rise for the full year, contrasting sharply with the 4.7% growth recorded in FY23. In the Budget 2024-25, the government plans to boost private and public investment in post-harvest activities and expand the application of Nano-DAP across agro-climatic zones. Strategies for self-reliance in oilseeds and dairy development are to be formulated, alongside ramping up the Pradhan Mantri Matsya Sampada Yojana and establishing Integrated Aquaparks. Allocation for PM-Formalisation of Micro Food Processing Enterprises scheme has increased from Rs. 639 in FY24 to Rs. 880 crores in FY25.

Going forward, rising bank credit to the sector and increased exports will be the drivers for the agriculture sector. However, a deficient rainfall may have impact on the reservoir level, weighing on prospects of Kharif sowing. Considering

these factors, the agriculture sector is estimated to attain Rs. 23.7 trillion and mark 1.4% y-o-y growth for complete FY24.

- From March 2020 onwards, the nationwide lockdown due to the pandemic significantly impacted the **industrial sector**. In FY20 and FY21, this sector felt turbulence due to the pandemic and recorded a decline of 1.4% and 0.9%, respectively, on a y-o-y basis. With the opening up of the economy and resumption of industrial activities, it registered 11.6% y-o-y growth in FY22, albeit on a lower base.

The industrial output in FY23 grew by only 2.1% with estimated value Rs. 44.74 trillion owing to decline in manufacturing activities.

The industrial sector grew by 6.0% in Q1FY24, while Q2FY24 growth was up by 13.6% owing to positive business optimism and strong growth in new orders supported manufacturing output. The industrial growth was mainly supported by sustained momentum in the manufacturing and construction sectors. Within manufacturing, industries such as pharma, motor vehicles, metals, petroleum and pharma witnessed higher production growth during the quarter. The construction sector (13.6% growth in Q2FY24) benefited from poor rainfall during August and September and higher implementation of infrastructure projects. This was reflected in robust cement and steel production and power demand in Q2FY24. Overall, H1FY24 picked up by 9.3% with manufacturing and construction activities witnessing significant acceleration. In Q3FY24, growth rate slowed down to 10.5%. It further fell down to 8.4% in Q4FY24.

India's industrial sector is experiencing strong growth, driven by significant expansion in manufacturing, mining, and construction. This growth is supported by positive business sentiment, declining commodity prices, beneficial government policies like production-linked incentive schemes, and efforts to boost infrastructure development. These factors collectively contribute to the sustained buoyancy in industrial growth due to which the industrial growth is estimated at 9.5% on y-o-y basis registering the value of Rs. 48.9 trillion in FY24.

- The **Services sector** was the hardest hit by the pandemic and registered an 8.2% y-o-y decline in FY21. The easing of restrictions aided a fast rebound in this sector, with 8.8% y-o-y growth witnessed in FY22.

Overall, in FY23, benefitting from the pent-up demand, the service sector was valued at Rs. 80.6 trillion and registered growth of 10.0% y-o-y.

In Q1FY24, the services sector growth jumped to 10.7%. Within services, there was a broad-based improvement in growth across different sub-sectors. However, the sharpest jump was seen in financial, real estate, and professional services. Trade, hotels, and transport sub-sectors expanded at a healthy pace gaining from strength in discretionary demand. The service sector growth in Q2FY24 moderated to 6.0% partly due to the normalization of base effect and some possible dilution in discretionary demand. Considering these factors, service sector marked 8.3% growth in H1FY24. In Q3FY24 growth increased to 7.1% compared to 7.2% last year in the same quarter. In Q4FY24, growth declined to 6.7% compared to 7.2% last year in the same quarter.

With this performance, steady growth in various service sector indicators like air passenger traffic, port cargo traffic, GST collections, and retail credit are expected to support the services sector. With this, the growth of service sector is estimated at Rs. 86.7 trillion registering 7.6% growth in FY24 overall.

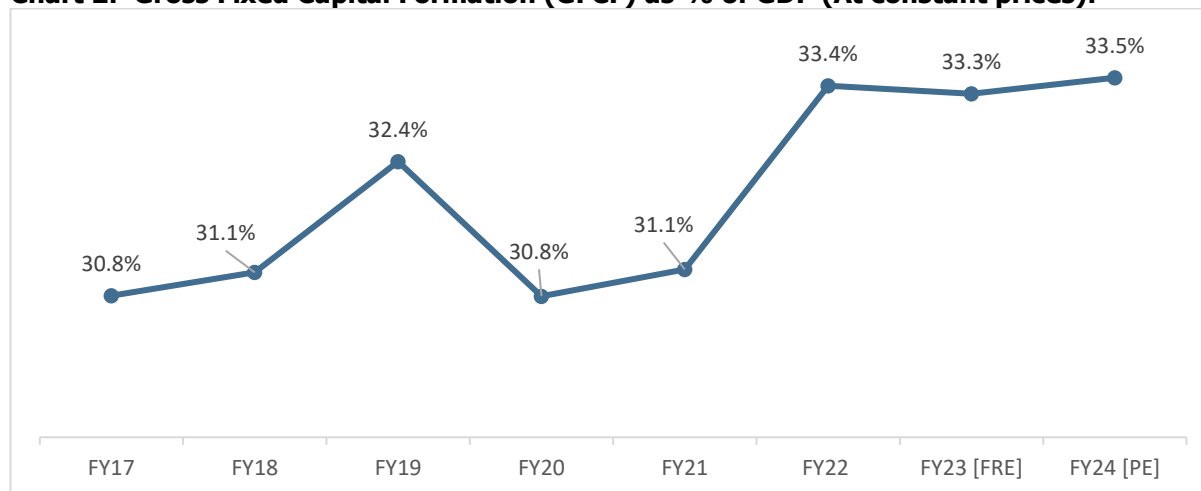
Table 3: Sectoral Growth (Y-o-Y % Growth) - at Constant Prices

At constant Prices	FY19	FY20	FY21	FY22	FY23 (FRE)	FY24 (PE)
Agriculture, Forestry & Fishing	2.1	6.2	4.1	3.5	4.7	1.4
Industry	5.3	-1.4	-0.9	11.6	2.1	9.5
Mining & Quarrying	-0.9	-3.0	-8.6	7.1	1.9	7.1
Manufacturing	5.4	-3.0	2.9	11.1	-2.2	9.9
Electricity, Gas, Water Supply & Other Utility Services	7.9	2.3	-4.3	9.9	9.4	7.5
Construction	6.5	1.6	-5.7	14.8	9.4	9.9
Services	7.2	6.4	-8.2	8.8	10.0	7.6
Trade, Hotels, Transport, Communication & Broadcasting	7.2	6.0	-19.7	13.8	12.0	6.4
Financial, Real Estate & Professional Services	7.0	6.8	2.1	4.7	9.1	8.4
Public Administration, Defence and Other Services	7.5	6.6	-7.6	9.7	8.9	7.8
GVA at Basic Price	5.8	3.9	-4.2	8.8	6.7	7.2

Note: FRE – First Revised Estimates, PE – Provisional Estimate; Source: MOSPI

1.2.3 Investment Trend in Infrastructure

Gross Fixed Capital Formation (GFCF), which is a measure of the net increase in physical assets, witnessed an improvement in FY22. As a proportion of GDP, it is estimated to be at 33.4%, which is the highest level in 5 years (since FY17). In FY23, the ratio of investment (GFCF) to GDP remained flat at 33.3%. Continuing in its growth trend, this ratio has reached 33.5% in FY24.

Chart 2: Gross Fixed Capital Formation (GFCF) as % of GDP (At constant prices):

Note: 3RE – Third Revised Estimate, 2RE – Second Revised Estimates, 1RE – First Revised Estimates, PE – Provisional Estimate, FAE-First Advance Estimate; Source: MOSPI

Overall, the support of public investment in infrastructure is likely to gain traction due to initiatives such as Atmanirbhar Bharat, Make in India, and Production-linked Incentive (PLI) scheme announced across various sectors.

1.2.4 Industrial Growth

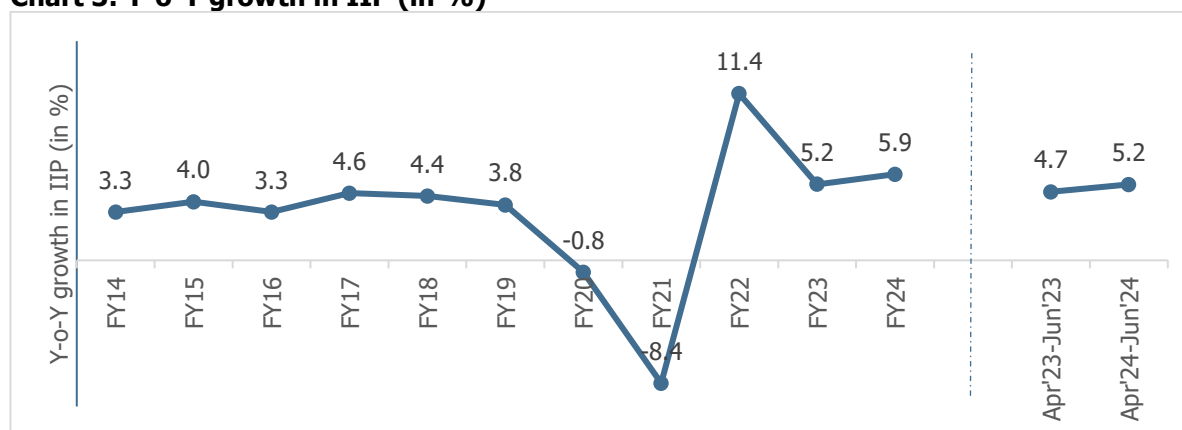
Improved Core and Capital Goods Sectors helped IIP Growth Momentum

The Index of Industrial Production (IIP) is an index to track manufacturing activity in an economy. On a cumulative basis, IIP grew by 11.4% y-o-y in FY22 post declining by 0.8% y-o-y and 8.4% y-o-y, respectively, in FY20 and FY21. This high growth was mainly backed by a low base of FY21. FY22 IIP was higher when compared with the pre-pandemic level of FY20, indicating that while economic recovery was underway. During FY23, the industrial output recorded a growth of 5.2% y-o-y supported by a favorable base and a rebound in economic activities.

During FY24, the industrial output recorded a growth of 5.9% y-o-y supported by growth in manufacturing and power generation sectors. The period April 2024 – June 2024, industrial output grew by 5.2% compared to the 4.7% growth in the corresponding period last year. For the month of June 2024, the IIP growth increased to 4.2% compared to the last year’s 4.0%, on account of growth in mining. The manufacturing sector showed a decline in June 2024 from 3.5% in June 2023 to 2.6% in June 2024. Within the growth in manufacturing, the top three positive contributors were Manufacture of basic metals, Manufacture of electrical equipment, and Manufacture of motor vehicles, trailers, and semi-trailers.

So far in the current fiscal, the government's spending on infrastructure has been strong, and there are visible signs of pick up in private investment. Consumer durables production increased due to favorable conditions, while non-durables saw a slight decline. Urban demand is driving consumption, while rural demand is recovering. Good monsoon forecasts are positive, but high unemployment and food inflation pose challenges. Infrastructure/construction output is growing well due to government spending. Private investment and manufacturing capacity utilization are increasing, supporting hopes for private sector growth. Good monsoon could boost rural demand, but food inflation remains a concern. Overall, sustained improvements in consumption and private investment are crucial for industrial performance.

Chart 3: Y-o-Y growth in IIP (in %)



Source: MOSPI

1.2.5 Consumer Price Index

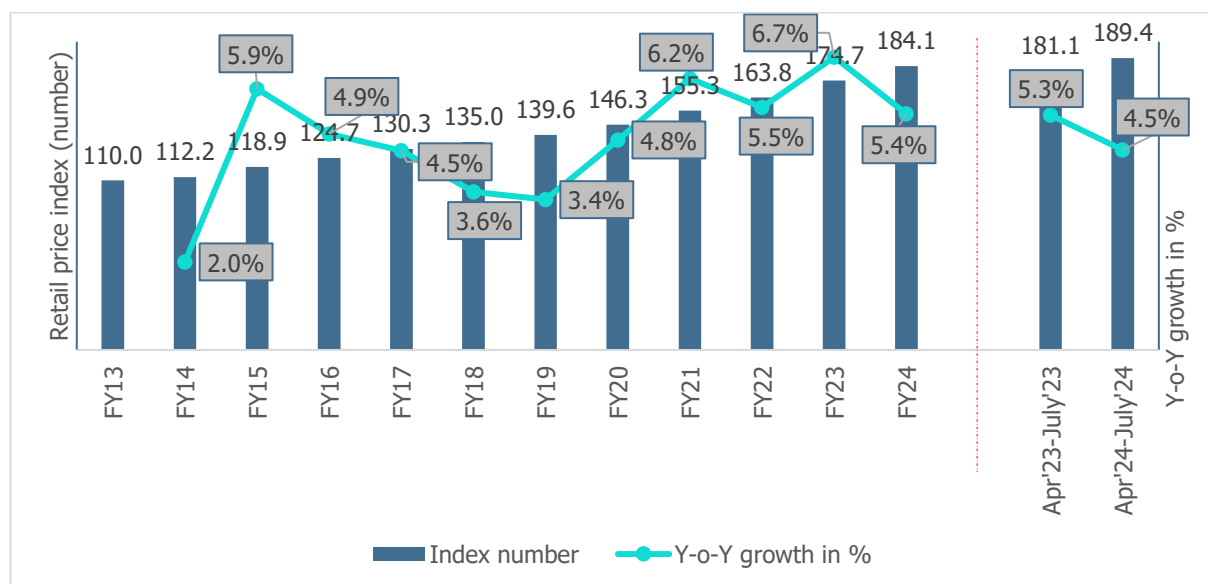
India’s consumer price index (CPI), which tracks retail price inflation, stood at an average of 5.5% in FY22 which was within RBI’s targeted tolerance band of 6%. However, consumer inflation started to upswing from October 2021 onwards and reached a tolerance level of 6% in January 2022. Following this, CPI reached 6.9% in March 2022.

CPI remained elevated at an average of 6.7% in FY23, above the RBI’s tolerance level. However, there was some respite toward the end of the fiscal wherein the retail inflation stood at 5.7% in March 2023, tracing back to the RBI’s tolerance band. Apart from a favorable base effect, the relief in retail inflation came from a moderation in food inflation.

In FY24, the CPI moderated for two consecutive months to 4.7% in April 2023 and 4.3% in May 2023. This trend snapped in June 2023 with CPI rising to 4.9%. In July 2023, the CPI had reached its highest point at 7.4%, this was largely due to increase in food prices. The notable surge in vegetable prices and in other food categories such as cereals, pulses, spices, and milk have driven this increase. In August 2023, the food inflation witnessed some moderation owing to government’s active intervention. This was further moderated for second consecutive month in September 2023 to 5%, led by a sharp correction in vegetables prices and lower LPG prices. Helped by deflation in the fuel and light category, the retail inflation in October 2023 softened at 4.9%. This trend reversed in November 2023 due to spike in certain vegetable prices as well as sticky inflation in non-perishable food items such as cereals, pulses and spices and the CPI rose to 5.6%. In the month of December 2023, elevated food prices and an unfavourable base drove headline inflation to a four-month peak of 5.7%. However in the month of January and February, food prices softened and the inflation was reported at 5.1% for both the months. March witnessed further softening of prices registering 4.9% growth. For FY24 inflation moderated to 5.4% which are within the boundaries set of 2% to 6% by the RBI.

High inflation in specific food items poses inflation risk, even though an improvement in south-west monsoon and progress in sowing are improving the food inflation outlook. This makes it crucial to monitor monsoon distribution. Additionally, global food prices also show some softening in July, post increases in March 2024. While government initiatives are expected to mitigate upward price pressure, external risks from geopolitical tensions may affect supply chains and commodity prices. The numbers for April 2024-July 2024 show a decline in inflation growth y-o-y to 4.5% as compared to inflation growth y-o-y of 5.3% in April 2023-July 2023 period. For July 2024, CPI inflation stood at 3.5% which has been the lowest retail inflation in the last 5 years. There was a decline in inflation among all groups with significant decline in vegetables, spices, and fruits subgroup. Additionally, food inflation was also at the lowest in this month since June 2023.

Chart 4: Retail Price Inflation in terms of index and Y-o-Y Growth in % (Base: 2011-12=100)

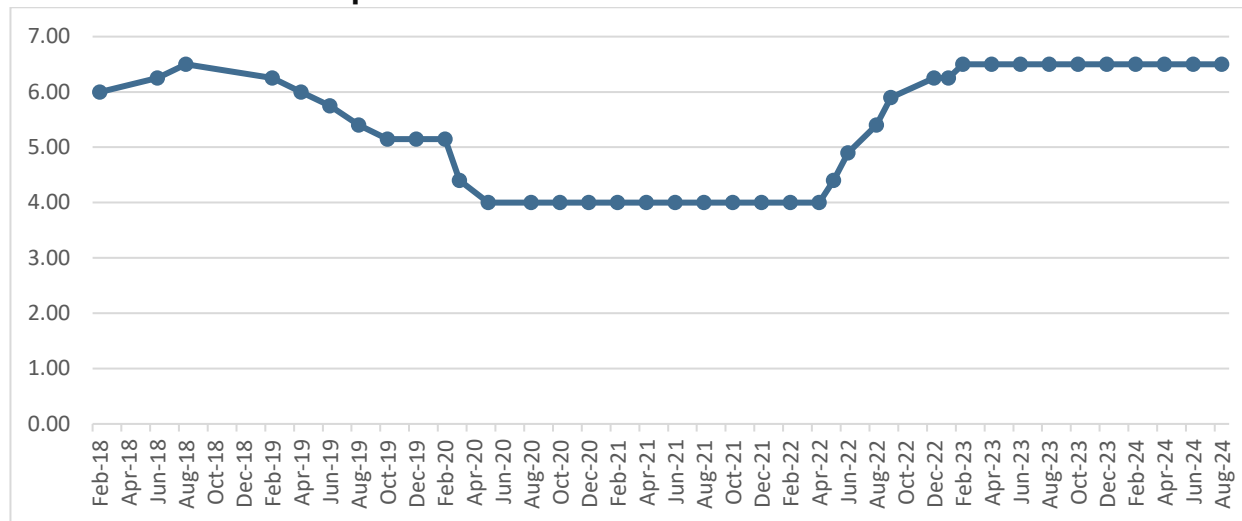


Source: MOSPI

The CPI is primarily factored in by RBI while preparing their bi-monthly monetary policy. At the bi-monthly meeting held in August 2024, RBI projected inflation at 4.5% for FY25 with inflation during Q2FY25 at 4.4%, Q3FY25 at 4.7%, Q4FY25 at 4.3%, and Q1FY26 at 4.4%.

Considering the current inflation situation, RBI has kept the repo rate unchanged at 6.5% again in the August 2024 meeting of the Monetary Policy Committee.

Chart 5: RBI historical Repo Rate



Source: RBI

In a meeting held in August 2024, RBI also maintained the liquidity adjustment facility (LAF) corridor by adjusting the standing deposit facility (SDF) rate of 6.25% as the floor and the marginal standing facility (MSF) at the upper end of the band at 6.75%.

Further, the central bank continued to remain focused on the withdrawal of its accommodative stance. While headline inflation has started easing due to softening in core component and economic activity has been resilient supported by domestic and investment demand, volatility in food prices due to adverse weather conditions pose a risk to the path of disinflation. Given the uncertainties in food prices that might derail the path to bring down inflation, the Central Bank has decided to be vigilant and maintain an active disinflationary stance to ensure complete transmission of past rate cuts and anchoring of inflation expectations until a better alignment of the headline CPI inflation with the target is achieved, while supporting growth.

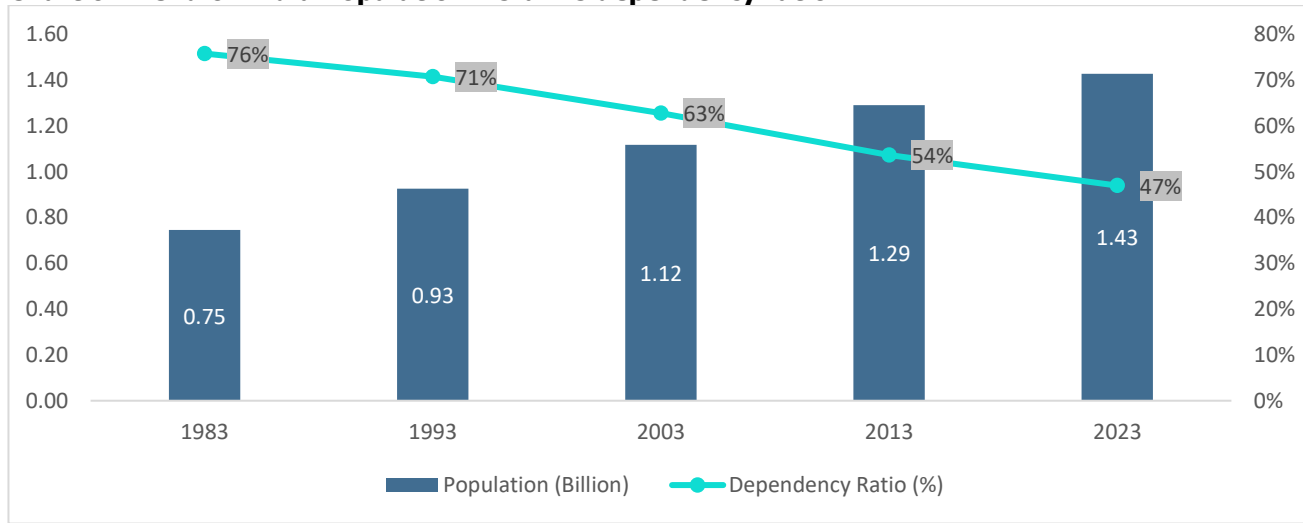
1.2.6 Overview on Key Demographic Parameters

- Population growth and Urbanization**

The trajectory of economic growth of India and private consumption is driven by socio-economic factors such as demographics and urbanization. According to the world bank, India’s population in 2022 surpassed 1.42 billion slightly higher than China’s population 1.41 billion and became the most populous country in the world.

Age Dependency Ratio is the ratio of dependents to the working age population, i.e., 15 to 64 years, wherein dependents are population younger than 15 and older than 64. This ratio has been on a declining trend. It was as high as 76% in 1983, which has reduced to 47% in 2023. Declining dependency means the country has an improving share of working-age population generating income, which is a good sign for the economy.

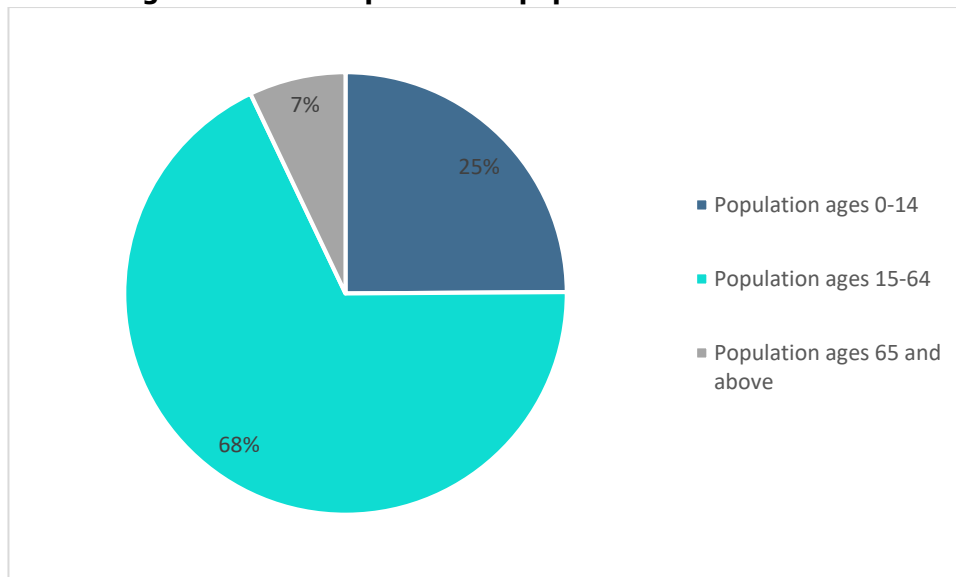
Chart 6: Trend of India Population vis-à-vis dependency ratio



Source: World Bank Database

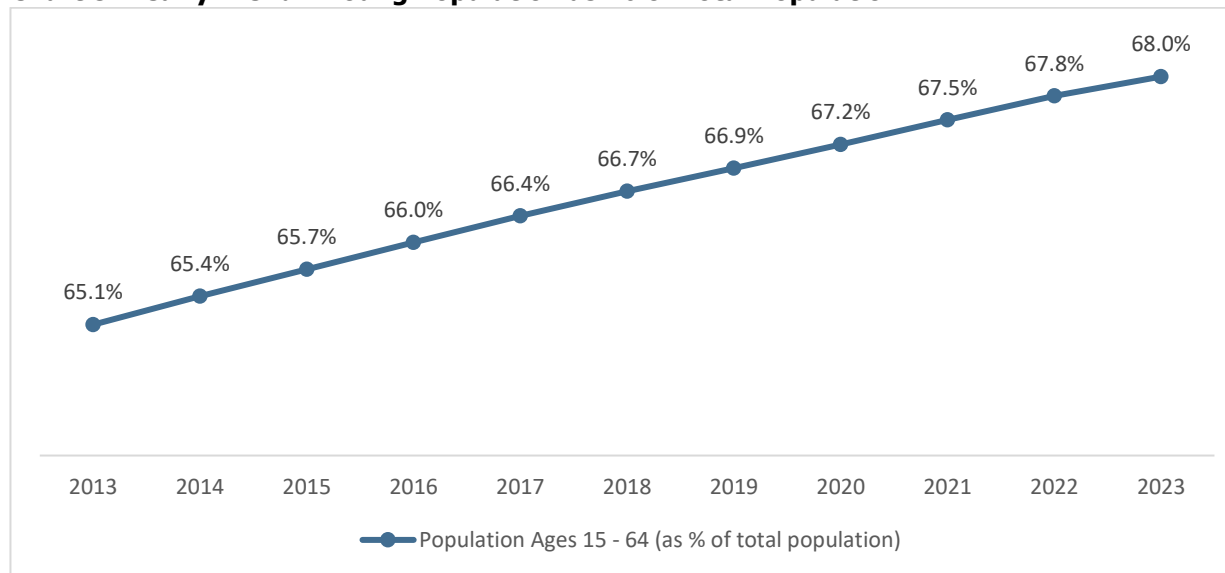
With an average age of 29, India has one of the youngest populations globally. With vast resources of young citizens entering the workforce every year, it is expected to create a 'demographic dividend'. India is home to a fifth of the world's youth demographic and this population advantage will play a critical role in economic growth.

Chart 7: Age-Wise Break Up of Indian population



Source: World Bank Database

Chart 8: Yearly Trend - Young Population as % of Total Population

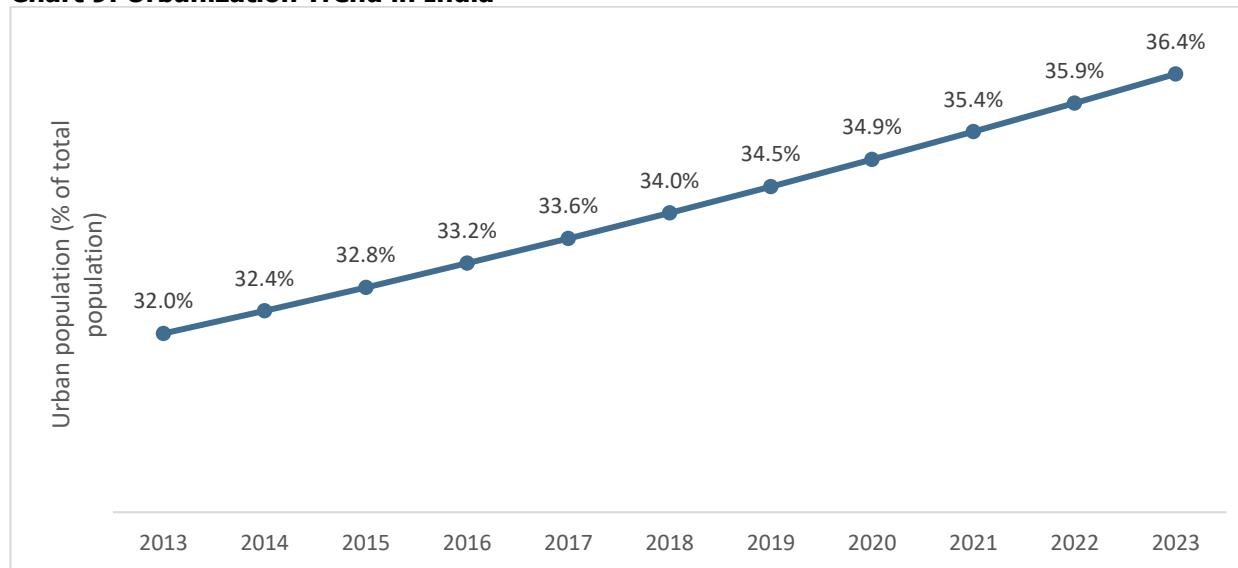


Source: World Bank database

- Urbanization**

The urban population is significantly growing in India. The urban population in India is estimated to have increased from 413 million (32% of total population) in 2013 to 519.5 million (36.4% of total population) in the year 2023. People living in Tier-2 and Tier-3 cities have greater purchasing power.

Chart 9: Urbanization Trend in India



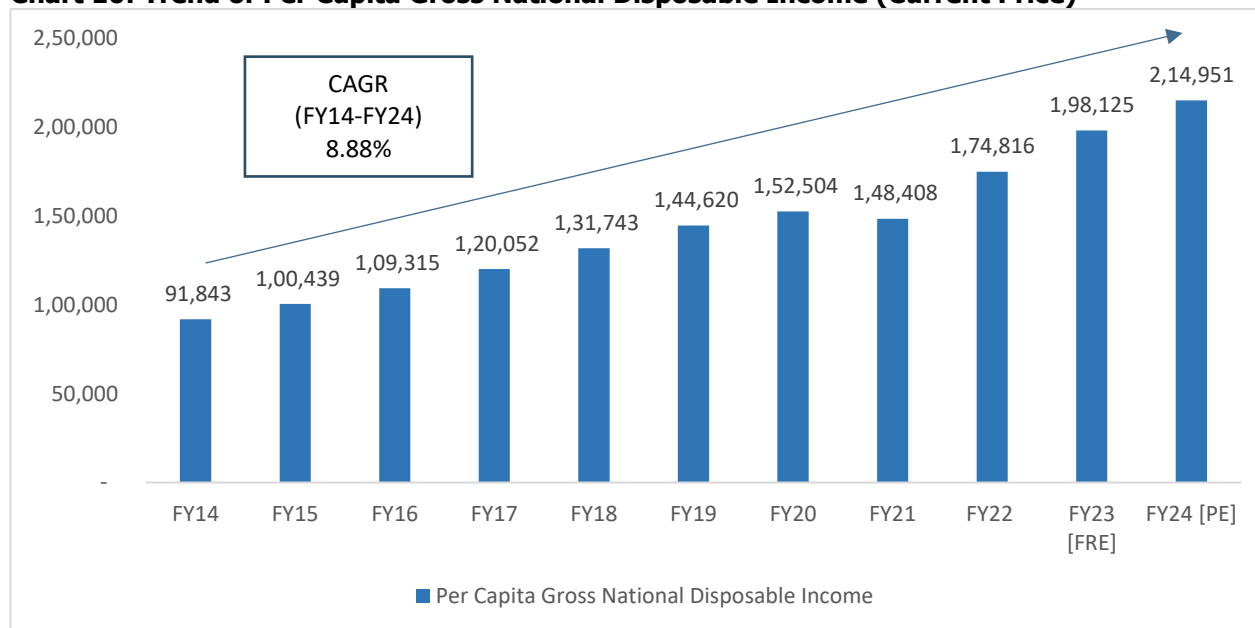
Source: World Bank Database

- Increasing Per Capita Disposable Income**

Gross National Disposable Income (GNDI) is a measure of the income available to the nation for final consumption and gross savings. Between the period FY14 to FY24, per capita GNDI at current prices registered a CAGR of 8.88%. More disposable income drives more consumption, thereby driving economic growth.

The chart below depicts the trend of per capita GNDI in the past decade:

Chart 10: Trend of Per Capita Gross National Disposable Income (Current Price)

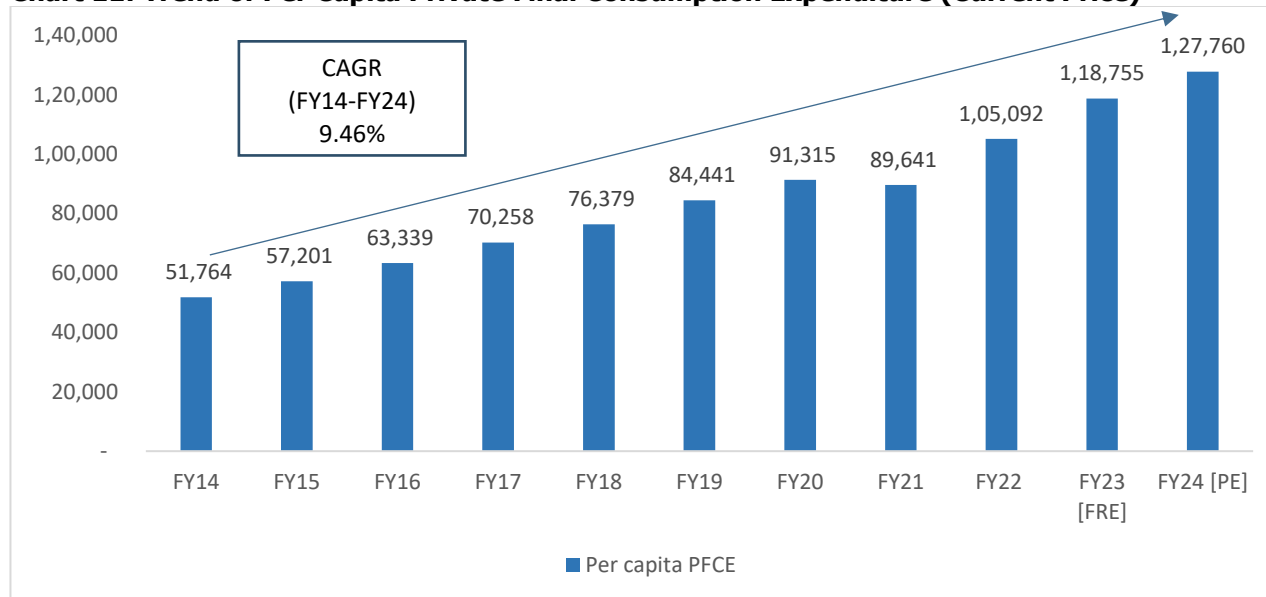


Note: 3RE – Third Revised Estimate, 2RE – Second Revised Estimates, 1RE – First Revised Estimates, PE – Provisional Estimate;
Source: MOSPI

• **Increase in Consumer Spending**

With increase in disposable income, there has been a gradual change in consumer spending behaviour as well. Private Final Consumption Expenditure (PFCE) which is measure of consumer spending has also showcased significant growth in the past decade at a CAGR of 9.46%. Following chart depicts the trend of per capita PFCE at current prices:

Chart 11: Trend of Per Capita Private Final Consumption Expenditure (Current Price)



Source: MOSPI

1.2.7 Concluding Remarks

The major headwinds to global economic growth are escalating geopolitical tensions, volatile global commodity prices, high interest rates, inflation woes, volatility in international financial markets, climate change, rising public debt, and new technologies. Despite the global economic growth uncertainties, the Indian economy is relatively better placed in terms of GDP growth compared to other emerging economies. According to IMF's forecast, it is expected to be 7% in CY24 compared to the world GDP growth projection of 3.2%. The bright spots for the economy are continued healthy domestic demand, support from the government towards capital expenditure, moderating inflation, investments in technology and improving business confidence.

Likewise, several high-frequency growth indicators including the purchasing managers index, E-way bills, bank credit, toll collections and GST collections have shown improvement in FY24. Moreover, normalizing the employment situation after the opening up of the economy is expected to improve and provide support to consumption expenditure.

The India Meteorological Department (IMD) has made a significant forecast, predicting "above normal" rainfall for the upcoming monsoon season, marking the first time in a decade that such an optimistic outlook has been declared at the initial stage. This forecast, coupled with an anticipated eight-year-high rainfall, offers promising prospects for the agrarian economy and inflation. The expected development of La Nina conditions in the second half of the year (August-September) further adds to the positive outlook. La Nina is a climate pattern that tends to enhance rainfall activity. IMD's more optimistic prediction is expected to bolster agricultural growth and incomes, while also potentially alleviating stubborn food inflation pressures.

At the same time, public investment is expected to exhibit healthy growth as the government has allocated a strong capital expenditure of about Rs. 11.11 lakh crores for FY25. The private sector's intent to invest is also showing improvement as per the data announced on new project investments and resilience shown by the import of capital goods. Additionally, improvement in rural demand owing to healthy sowing, improving reservoir levels, and progress in south-west monsoon along with government's thrust on capex and other policy support will aid the investment cycle in gaining further traction.

2. Toll Operations market in India

2.1 Toll Collection

2.1.1 Structure of toll collection industry in India

The Central Government is authorized to impose fees on national highways for various services like ferries, permanent bridges, temporary bridges, and tunnels. Toll collection typically operates under an open system, where fees are determined based on the length of the road segment, usually around 60 kilometers. Toll plazas are positioned approximately every 60 kilometers, with exceptions made under certain circumstances such as land availability or traffic congestion.

Concessions are sometimes provided to local or frequent users as a welfare measure. Toll rates undergo annual revision, rounded off to the nearest Rs 5. Collection may commence when a project reaches 75% completion, allowing users to access completed sections while paying tolls only for the portion in use. Toll collection continues until the concession period ends.

Once the construction costs are recouped, tolls may be reduced to 40% to cover maintenance expenses. Exemptions for specific vehicles vary based on the regulations applicable at the time of road construction.

- **Road Network Length:** As of the end of 2023, India boasts a vast road network covering approximately 6.67 million kilometers, making it the second-largest in the world. This network is categorized into National Highways, State Highways, and Other Roads.
 - **National Highways:** The National Highway network spans 1,46,145 kilometers, serving as vital arteries for the country's economic and social development.
 - **State Highways:** Comprising 1,79,535 kilometers, State Highways complement the National Highways in facilitating intra-state transportation and connectivity.
 - **Other Roads:** This category encompasses the bulk of the road network, totaling 63,45,403 kilometers. These roads play a crucial role in connecting rural areas, urban centers, and local communities, contributing significantly to transportation and accessibility nationwide.
- **Growth and Expansion:**
 - Over the past nine years, the Ministry of Road Transport and Highways (MoRTH) and its implementing agencies have embarked on various initiatives to enhance the capacity and efficiency of the National Highway infrastructure.
 - The National Highway network has witnessed remarkable growth, with a 60% increase from 91,287 kilometers in 2014 to 1,46,145 kilometers by the end of 2023.
 - Notably, the length of National Highways with four lanes or more has surged by 2.5 times, reaching 46,179 kilometers by November 2023. Conversely, the length of less than two-lane National Highways has decreased significantly, demonstrating a strategic focus on upgrading and widening existing infrastructure.
- **Construction Pace and Expenditure:**
 - The average pace of National Highway construction has soared by 143%, reaching 28.3 kilometers per day from 2014 onwards. This accelerated construction rate reflects concerted efforts to expedite infrastructure development and meet growing transportation demands.
 - Expenditure on road infrastructure has also witnessed a substantial increase, expected to rise by 9.4 times to Rs 3.17 Trillion by 2023. This heightened investment underscores the government's

commitment to modernizing and expanding the road network to support economic growth and development.

- **Special Initiatives and Programs:**

- The Ministry has launched several special campaigns and initiatives to address specific challenges and enhance road safety, efficiency, and consumer empowerment. These include the Bharat New Car Assessment Programme, aimed at providing safety ratings for passenger cars, and the Vehicle Scrapping Policy, which aims to remove old and polluting vehicles from the roads.
- Furthermore, the implementation of digital tools and mobile applications, such as Rajmarg Yatra and NHAI One, demonstrates a concerted effort to leverage technology for customer redressal and on-site project execution.

In summary, the quantitative overview of India's Roads & Highway industry showcases significant progress and strategic investments in infrastructure development, aimed at fostering economic growth, improving connectivity, and ensuring road safety and efficiency across the nation

In India, the management of toll plaza operates under a structured contract framework when outsourced to private entities. This system encompasses various stages and procedures to ensure effective toll collection and infrastructure management.

1. **Initiation of User Fee Collection:** User fee collection typically commences within 45 days of the Commercial Operation Date (COD) of the National Highway Project, as per the National Highway Fee Rules of 2008. To facilitate this, all User Fee Plazas must be substantially completed, along with necessary infrastructure, at least 60 days prior to the COD.
2. **Proposal Submission and Approval:** State Government Chief Engineers or relevant authorities such as NHAI/NHIDCL initiate proposals for issuing User Fee Notifications at least six months before project completion. These proposals, accompanied by essential details and draft notifications, are submitted to the Ministry for approval. Proposals seeking deviations from prescribed norms must be justified adequately.
3. **Approval and Handover Process:** After examination and approval by concerned Project Zones and the Toll Division of the Ministry, User Fee Notifications are published, authorizing NHAI or designated agencies to collect User Fees. Upon successful processing, NHAI assumes management responsibilities for tolling at the designated plaza, while the respective agency retains control over the highway section.
4. **Electronic Toll Collection (ETC) Compliance:** User Fee Plazas are mandated to be ETC compliant. NHAI is tasked with converting all lanes to Hybrid ETC compliant systems, ensuring dedicated lanes for vehicles equipped with ETC technology.
5. **Conversion and Implementation:** NHAI prepares proposals and cost estimates for converting Plazas to ETC compliance and engages vendors for implementation. Once approved, NHAI commences Plaza conversion works upon receipt of necessary approvals and funds.
6. **Timelines and Responsibilities:** The outlined procedures adhere to specific timelines and responsibilities, ensuring timely completion of toll plaza construction and ETC conversion well in advance of the COD.
7. **Applicability:** The contractual framework applies to both new highway projects and existing toll plazas, including BOT(Annuity), HAM projects, and ongoing BOT(Toll) projects.

This structured approach ensures efficient toll management and infrastructure maintenance, contributing to the overall effectiveness of India's national highway network.

2.1.2 Market sizing of toll collection industry and outlook

More than 7.98 Crore FASTags have been issued till 30.11.2023. The toll collection via FASTag has grown significantly after declaration of all lanes of fee plazas on National Highways as FASTag Lane of the fee plaza w.e.f. midnight of 15th/16th February 2021. Average Daily collection via FASTag on NH fee plaza is Rs. 147.31 Crores and Number of average daily Electronic Toll Collection (ETC) transaction on National Highway (NH) fee plaza is Rs.86.61 Lakhs in F.Y. 23-24 (Till Nov 2023). The constant growth and adoption of FASTag by highway users is very encouraging and has helped increase efficiency in toll operations.

There has been an upside in toll collection after increase in Toll Operate Transfer (TOT) models and Monetization of assets by Government of India. In FY23 the toll revenue increased by 41.6% when compared with FY22 at Rs. 48,029.2 crores. In FY24 it is expected to grow much higher as till Nov'23 toll collection stood at Rs. 36,377.8 crores.

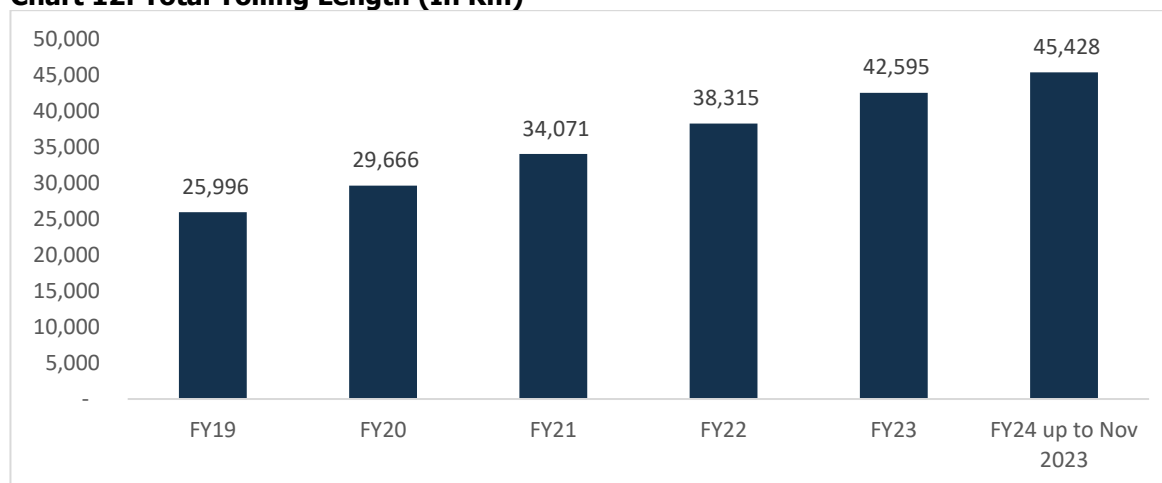
Table 4: User Fee Collection Revenue (Rs. Crore)

Financial Year	NHAI	MORTH	Total Amount
FY19	24,396.2	758.6	25,154.8
FY20	26,850.7	786.9	27,637.6
FY21	27,159.6	764.2	27,923.8
FY22	33,037.1	870.6	33,907.7
FY23	46,998.0	1,030.2	48,028.2
FY24 up to Nov 2023	35,645.1	732.7	36,377.8

Source: PIB, CareEdge Research

The tolling length has also increased on yearly basis. It has grown by 74.7% when compared with FY19 implying government shifts towards increasing toll plaza and efficient toll collection with Fastag collection system. As of Nov'23 the toll length stands at 45,428 Km.

Chart 12: Total Tolling Length (In Km)



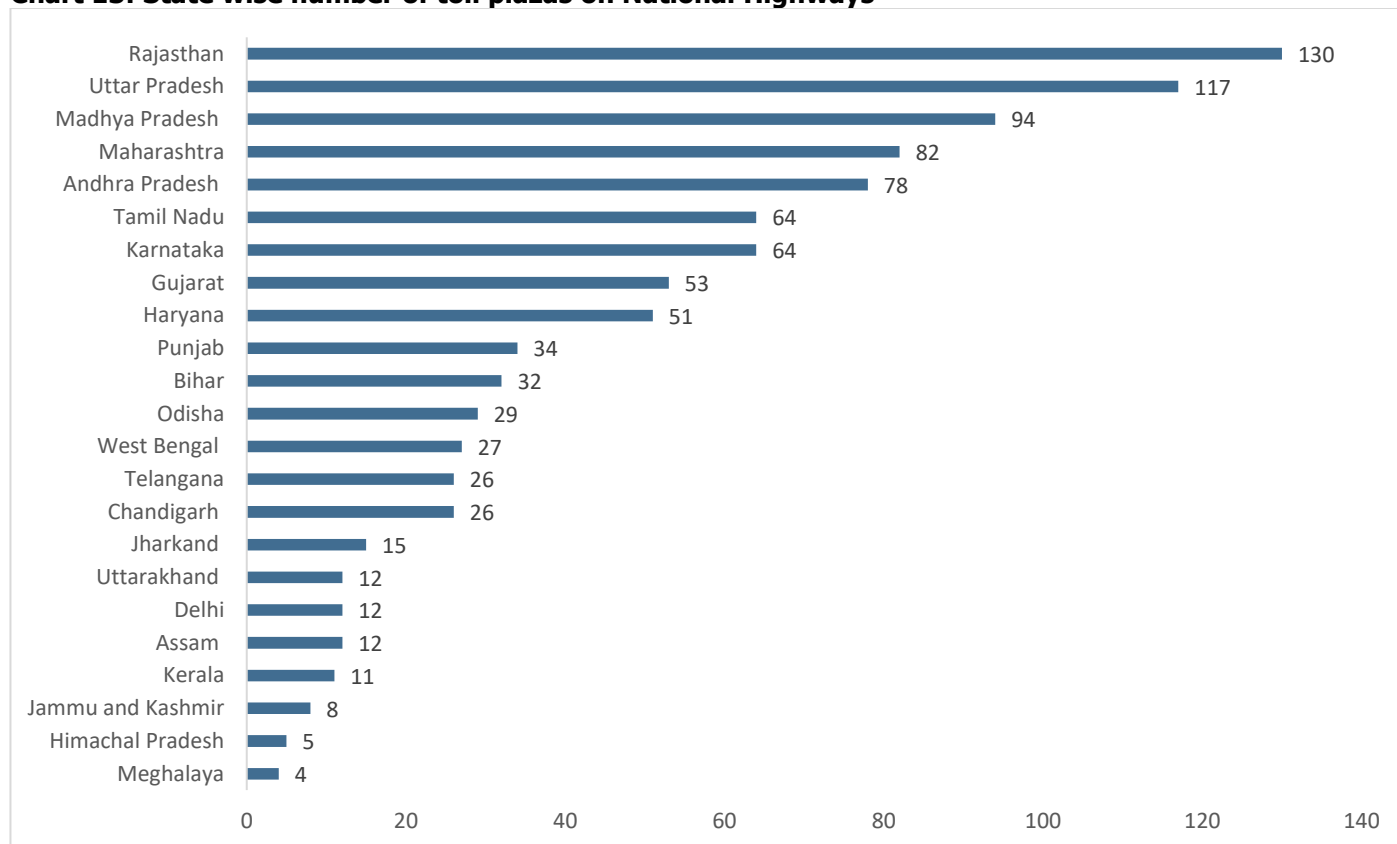
Source: PIB, CareEdge Research

Total Tolling Length is expected to grow in future with increasing toll revenue for the government. The government's upcoming NHAI projects focused on connectivity and increasing expressways which will help increase in cargo and

passenger vehicle movement. The investments made in projects will be recovered through toll collection for a period of 15-20 years, this will eventually lead to increase in toll collection in future for NHAI.

The Outlook of the toll industry remains positive as more and more roads length of Km are expected to be completed by 2025 generating revenue's in future. According to PIB (Press Information Bureau) and CareEdge, the toll length of approximately 5,100 km are expected to be completed by FY25. This will approximately increase the toll revenue by 4,200 crore for FY25 & FY26. Increase in traffic volume in passenger and commercial vehicles will lead to further increase in toll revenues.

Chart 13: State wise number of toll plazas on National Highways



Source: NHAI website accessed on 12th July 2024, CareEdge Research

The distribution of toll plazas across Indian states for National Highway tolls varies significantly. Rajasthan has the most with 130 tolls, followed by Uttar Pradesh with 117. Madhya Pradesh and Maharashtra have 94 and 82 tolls respectively. In contrast, states like Meghalaya and Himachal Pradesh have fewer toll plazas, with only 4 and 5, respectively. This variation reflects differences in road infrastructure and network coverage across the country.

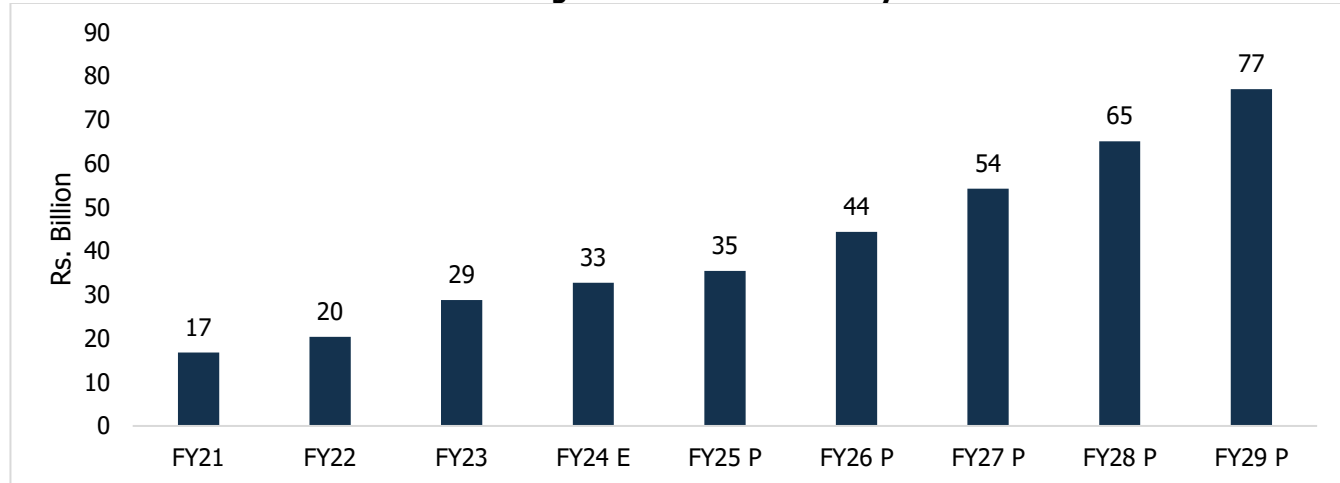
Table 5: Key Players Managing over 60% of toll plaza

Concessionaire	Number of Toll Plaza Managed
NHAI	539
IRB	33
L&T	20
Ashirwad	16

Source: NPCI

NHAI is the largest concessionaire manages over 500 toll plazas, managing more than 50% of the total 985 toll plazas. IRB Infrastructure Developers Limited is the second largest concessionaire of toll plaza and manages over 30 national toll plazas, followed by Larsen & Toubro (L&T) that manages 20 toll plazas. Ashirwad Infrastructure Private Limited manages 16 toll plaza and Reliance Infrastructure Limited manages 15 toll plazas. As on June 2020, 115 entities were empaneled with the National Highways Authority of India (NHAI) as toll collecting contractors which increased to 122 as on June 2024, with Innovision Limited being one of them.

Chart 14: Market Size of Toll Plaza Management Services Industry – In value terms



Source: CAREEDGE Estimates

Note: E indicates Estimated, P indicates Projected

The market size of toll management services industry has seen significant growth at 21% CAGR between FY21-FY29, this increase is largely supported by boost in construction of national highway, Government's initiatives towards Roads and Transport sector. In FY24, the market size of toll management services industry in value terms is estimated to have reached Rs. 33 billion, indicating nearly 14% y-o-y growth over FY23.

Past trend and outlook on future awarding execution of contracts - toll operators

- The Ministry of Road Transport and Highways is primarily responsible for the development and maintenance of national highways. The NH network in the country has expanded from about 1,32,995 km in March 2020 to about 1,44,955 km in March 2023.

The NH projects of about 36,071 km have been awarded during the last three years, including NH projects of about 2,709 km taken up in the State of Uttar Pradesh.

- About 34,115 km length of national highways has been constructed during the last three years, including 2,383 km constructed in Uttar Pradesh.

Investments/ Funds allocated for development of NHs in Key States

States	FY21		FY22		FY23	
	Allocation	Expenditure	Allocation	Expenditure	Allocation	Expenditure
Rajasthan	842	911	836	846	1,456	1,459
Uttar Pradesh	1,715	1,798	1,265	1,329	1,984	2,008
Uttarakhand	960	1,039	665	654	600	585
Punjab	820	675	528	501	480	374
Haryana	160	143	110	96	100	100
Jammu & Kashmir	70	52	90	68	390	101
Ladakh	20	17	11	0	3	0
Himachal Pradesh	176	182	722	748	883	822
Chandigarh	1	0	1	0	1	0
Madhya Pradesh	1,750	1,958	1,306	1,255	752	756
Maharashtra	9,849	9,266	6,099	6,145	4,525	4,626
Gujarat	730	828	800	810	900	696
Total	17,093	16,869	12,433	12,452	12,074	11,527

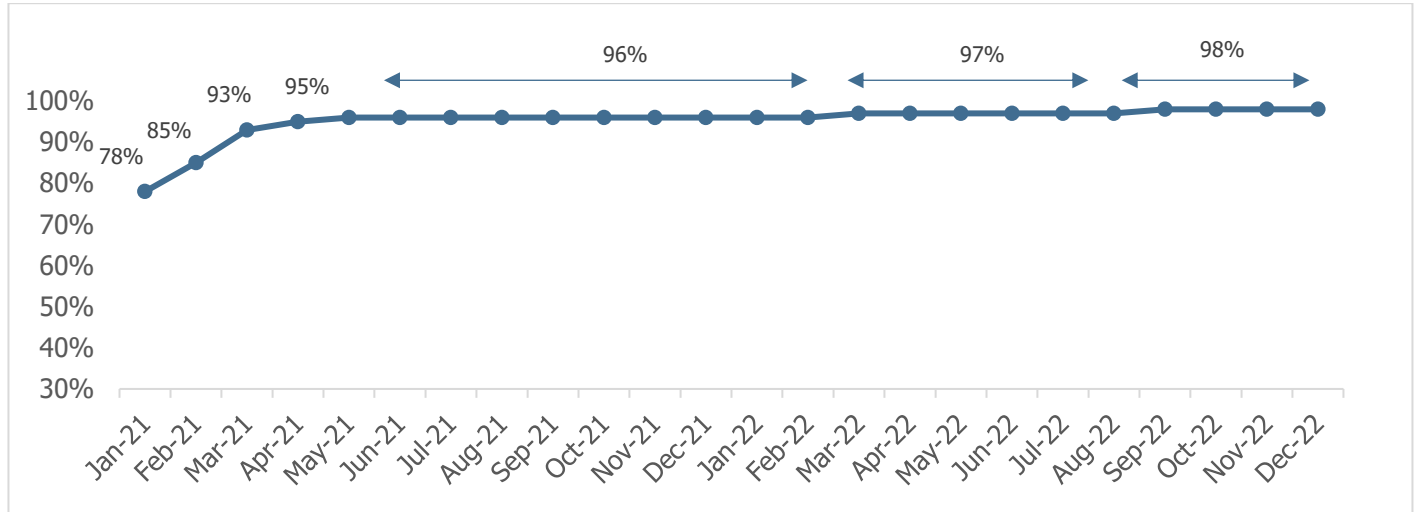
Source: Press Information Bureau, CareEdge Research

- The total investments in northern regions constitute about 5,897 (allocation) and the expenditure of the same was 5,449. The allocation of funds/ investments has seen an increase of around 39% in FY23 as compared to the previous year.

2.1.3 Value chain of electronic toll collection (NETC FasTag)

The Indian value chain of Electronic Toll Collection (ETC), also known as the NETC FASTag system, operates through a collaborative network involving various stakeholders and processes aimed at facilitating smooth toll collection across the country's highways and toll plazas. Governed by governmental initiatives and regulations set forth by the Ministry of Road Transport and Highways (MoRTH), the system comprises system providers, including both government and private entities, tasked with deploying and maintaining the ETC infrastructure. Banks and payment service providers are pivotal in issuing FASTags to vehicle owners, managing transactions, and ensuring interoperability across toll plazas. Vehicle owners procure FASTags and reap the benefits of quicker, contactless toll payments, while toll plaza operators oversee daily operations and integrate ETC lanes with FASTag readers. Regulatory bodies like the National Highways Authority of India (NHAI) and the Indian Highways Management Company Limited (IHMCL) monitor standards and compliance to ensure the smooth functioning and interoperability of FASTag. Technology partners play a crucial role in developing hardware and software solutions to support ETC systems, contributing to the modernization of toll collection infrastructure and the promotion of digital payment methods throughout India's road network. Together, these stakeholders collaborate to streamline toll collection processes, improve traffic flow, and encourage the widespread adoption of digital payment solutions across the nation.

Chart 15: ETC Penetration



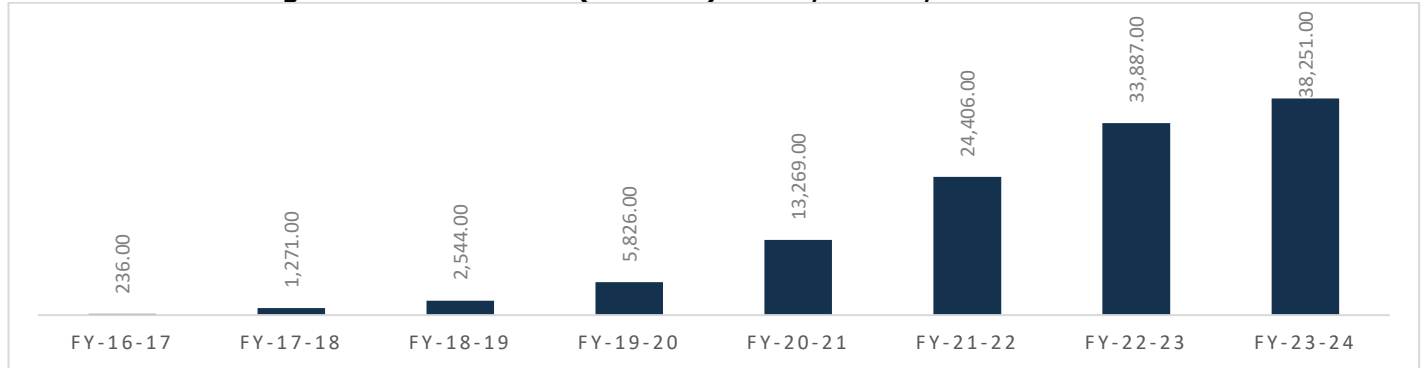
Source: Ministry of Roads, Transport and Highways, CareEdge Research

The data reveals a consistent upward trend in Electronic Toll Collection (ETC) penetration in India from January 2021 to December 2022. ETC penetration increased steadily from 78% in January 2021 to 98% by December 2022, indicating widespread adoption of ETC FASTags among vehicle owners.

2.1.4 FasTag Toll collections in India by value and volume

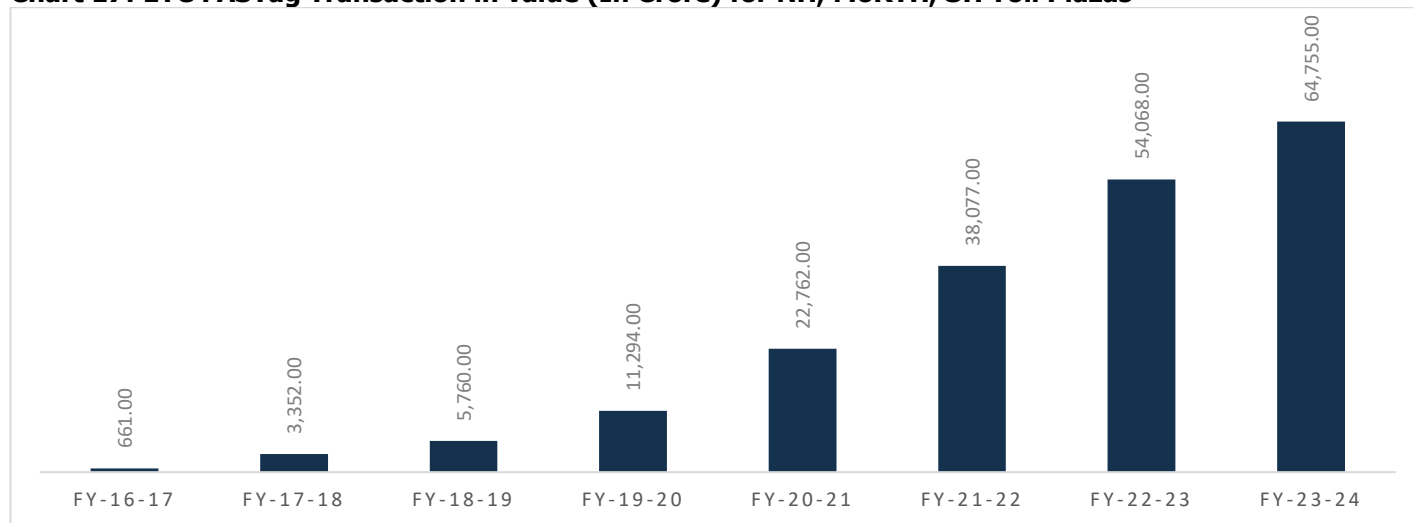
The financial year wise data for ETC FASTag transactions (in lakhs) at National Highways (NH), Ministry of Road Transport and Highways (MoRTH), and State Highways (SH) toll plazas over the past eight years demonstrates a remarkable upward trend in adoption. Starting from FY 2016-17 with 236.00 lakhs transactions, there was a consistent increase year after year. By FY 2023-24, transactions surged to 38,251.00 lakhs, indicating a significant acceleration in FASTag usage. This growth trajectory signifies the increasing acceptance and integration of FASTag as the preferred mode of toll payment.

Chart 16: ETC FASTag Transaction volume (In Lakhs) for NH, MoRTH, SH Toll Plazas



Source: IHMCL, CareEdge Research

Each year witnessed a substantial rise in transactions, highlighting the effectiveness of FASTag in streamlining toll payments and enhancing overall efficiency in transportation infrastructure management. The data underscores the successful implementation of FASTag across NH, MoRTH, and SH toll plazas in India, contributing to a smoother and more convenient travel experience for motorists while also facilitating better revenue collection and toll plaza operations.

Chart 17: ETC FASTag Transaction in value (In Crore) for NH, MoRTH, SH Toll Plazas


Source: IHMCL, CareEdge Research

The ETC FASTag collections over the past eight years illustrates a significant upward trend, indicating a substantial increase in revenue generated through FASTag transactions. Starting from FY 2016-17 with Rs. 661.00 crore in collections, there was a consistent year-on-year growth. By FY 2023-24, collections soared to Rs. 64,755.00 crore, representing a remarkable surge in FASTag toll revenue.

This upward trajectory in FASTag collections reflects the increasing adoption and usage of FASTag for toll payments across the country. Each financial year witnessed substantial growth in collections, showcasing the effectiveness of FASTag in enhancing revenue generation and toll plaza operations. The surge in collections can be attributed to various factors, including the expansion of the FASTag network, government initiatives promoting digital payments, and incentives provided to motorists for adopting FASTag.

Overall, the data highlights the successful implementation of FASTag in India, contributing to streamlined toll payments, improved traffic management, and increased revenue for infrastructure development.

2.1.5 Key growth drivers and challenges in the industry

2.1.6.1 Key drivers

The toll collection industry in India is driven by several key factors that contribute to its growth and development:

- Infrastructure Development:** The ongoing expansion and development of road infrastructure, including national highways, expressways, and bridges, create opportunities for toll collection. Government initiatives such as the Bharatmala Pariyojana and National Highways Development Project (NHDP) aim to enhance connectivity and upgrade road networks, driving the demand for toll roads as well as **National Monetization Pipeline (NMP)** and the government has also focused on financing of infra projects thus, **Development Finance Institution (DFI)** is created to improve the financing of infrastructure projects.
- Urbanization and Population Growth:** Rapid urbanization and population growth result in increased vehicular traffic and demand for transportation infrastructure. Toll roads offer faster and more efficient travel options, especially for commuters and commercial vehicles, driving the growth of the toll collection industry.

- **Private Sector Participation:** Government policies promoting public-private partnerships (PPPs) in infrastructure development have attracted private sector investments in toll road projects. Private investors bring expertise, capital, and innovation to toll road projects, accelerating their development and contributing to industry growth.
- **Policy Support and Regulatory Framework:** Supportive government policies, regulatory frameworks, and initiatives to streamline toll operations facilitate industry growth. Clear guidelines, standardized procedures, and transparent bidding processes create a conducive environment for investment and development in toll road projects.
- **Technological Advancements:** The adoption of advanced technologies such as electronic toll collection (ETC), RFID-based tolling systems, and real-time traffic management solutions improves the efficiency and effectiveness of toll collection operations. Technology-driven initiatives enhance user experience, reduce congestion, and increase revenue collection. Electronic Toll Collection (ETC) and RFID-based systems streamline toll collection by reducing manual handling, minimizing errors, and speeding up transactions, which leads to increased operational efficiency and revenue. Additionally, real-time traffic management solutions enhance user experience by reducing congestion and providing up-to-date traffic information, thus improving overall satisfaction and encouraging more frequent use of toll roads.
- **ANPR-based system:** Automatic Number Plate Recognition (ANPR) technology plays a crucial role in modern toll collection systems. It employs high-resolution cameras to capture vehicle number plates, even under challenging conditions. The captured images are processed using Optical Character Recognition (OCR) to convert them into a digital format. This information is then matched with a database of registered vehicles to automatically deduct the toll fee. If no match is found, the system can issue a violation notice or bill to the vehicle owner, ensuring efficient enforcement and penalizing toll evaders. In 2022, pilot implementation of the Automatic Number Plate Recognition (ANPR) based system has been implemented along stretches of Delhi-Meerut Expressway. In this system, applicable user fees is deducted from FASTag based on the entry and exit of the vehicles as captured by ANPR cameras installed at various entry and exit locations. NHAI has appointed a consultant agency for detailed study on Automatic Number Plate Recognition (ANPR) technology.
- **GPS Based Technology:** India is set to implement a GPS-based toll collection system, using GNSS technology to track vehicles and calculate tolls based on distance traveled.
- **Increasing Demand for Efficient Transportation:** Growing demand for efficient transportation services, particularly for freight and logistics, drives the development of toll roads and expressways. Toll roads offer time-saving benefits, reduced travel times, and improved connectivity, attracting users and supporting economic activities.
- **Revenue Generation and Financing Models:** Toll roads provide a sustainable revenue stream for infrastructure development and maintenance. Innovative financing models, such as Build-Operate-Transfer (BOT), Hybrid Annuity Model (HAM), and Toll-Operate-Transfer (TOT) model, enable efficient project financing and long-term revenue generation, attracting investments in toll road projects.
- **Focus on Sustainable Development:** Increasing emphasis on sustainable development, environmental conservation, and green infrastructure influences toll road projects. Integration of eco-friendly practices, adoption of green technologies, and mitigation of environmental impacts contribute to the growth and acceptance of toll roads among stakeholders.

By leveraging these growth drivers and addressing challenges, the toll collection industry in India can further expand its infrastructure network, improve service quality, and contribute to the country's economic development and mobility enhancement efforts.

2.1.6.2 Key challenges

- **Traffic Congestion:** Toll plazas often experience significant traffic congestion, leading to delays for commuters and commercial vehicles. This congestion not only affects the efficiency of toll collection but also contributes to increased fuel consumption and air pollution. Although, with the installment of Fast Tag the congestion has reduced but still it is not resolved completely.
- **Technological Infrastructure:** Many toll collection systems in India still rely on manual processes, leading to inefficiencies and potential revenue leakage. The adoption of advanced technologies such as electronic toll collection (ETC) and RFID-based systems is essential to improve efficiency and reduce operational costs.
- **Maintenance and Upkeep:** Ensuring the proper maintenance and upkeep of toll infrastructure, including roads, bridges, and toll booths, is crucial for ensuring safe and efficient operations. Limited funding and resources for maintenance can lead to deteriorating infrastructure and reduced service quality.
- **Revenue Leakage and Fraud:** The manual nature of toll collection processes increases the risk of revenue leakage and fraudulent activities such as under-reporting of toll collections and ticket tampering. Implementing robust auditing and monitoring mechanisms is essential to mitigate these risks.
- **Interoperability Issues:** Lack of interoperability between different toll collection systems and operators can create inconvenience for commuters traveling across multiple toll roads. Streamlining interoperability and standardizing toll collection systems can enhance user experience and improve overall efficiency.
- **Public Opposition and Protests:** Toll collection sometimes faces opposition from local communities and interest groups, leading to protests and disruptions. Addressing public concerns, ensuring transparency in toll collection processes, and engaging with stakeholders are essential for building public trust and acceptance.
- **Environmental Concerns:** Toll infrastructure projects often face environmental challenges such as land acquisition issues, displacement of communities, and ecological impacts. Conducting comprehensive environmental assessments and implementing mitigation measures are essential for sustainable toll infrastructure development.

2.1.7 Nature of procurement of Tenders for awarding of toll contract

- **Tender Announcement and Documentation:**

The procurement process commences with the issuance of a tender notice by relevant authorities such as the National Highways Authority of India (NHAI) or state highway agencies. This notice serves to inform potential bidders about the project specifics, including its scope, requirements, and evaluation criteria. Detailed documentation accompanying the tender notice outlines the eligibility criteria, submission guidelines, and terms and conditions that prospective bidders must adhere to throughout the bidding process.

- **Prequalification of Bidders:**

Interested parties seeking to participate in the bidding process are required to submit prequalification documents to demonstrate their eligibility. These documents typically include information pertaining to the bidder's financial stability, technical capabilities, past experience in similar projects, and compliance with legal and regulatory requirements. The

prequalification process allows the authority to shortlist bidders who meet the specified criteria, ensuring that only qualified candidates proceed to the next stage of the procurement process.

- **Submission of Bids:**

Shortlisted bidders prepare and submit their bids within the designated timeframe, adhering to the guidelines outlined in the tender documentation. Bids consist of both technical and financial proposals, with the technical proposal outlining the bidder's approach to toll operations, maintenance plans, staffing arrangements, and other relevant aspects. The financial proposal includes details such as proposed toll rates, revenue sharing models (if applicable), and any additional financial considerations put forth by the bidder.

- **Bid Evaluation:**

Upon the submission of bids, a bid evaluation committee appointed by the authority undertakes a comprehensive assessment of each bid. The evaluation process involves a thorough review of the technical and financial proposals submitted by the bidders against predetermined evaluation criteria. These criteria may encompass factors such as technical expertise, operational efficiency, financial viability, proposed toll rates, compliance with project requirements, and any innovative solutions proposed by the bidder. The committee conducts technical evaluations, financial assessments, site visits, and due diligence checks as part of the evaluation process.

- **Bid Selection and Negotiation:**

Following the evaluation process, the authority selects the most competitive bid that offers the best value for money and aligns with project objectives. Upon selection, negotiations commence between the authority and the successful bidder to finalize the terms and conditions of the toll contract. Negotiations may cover various aspects, including toll rates, revenue sharing arrangements, performance guarantees, service level agreements, dispute resolution mechanisms, and any other contractual provisions deemed necessary by either party.

- **Contract Award:**

Once negotiations are concluded and terms are mutually agreed upon, the authority formally awards the toll contract to the successful bidder. A formal contract document is prepared and signed by both parties, outlining the rights, obligations, responsibilities, and duration of the concession or contract. The contract serves as a legally binding agreement that governs the relationship between the authority and the awarded bidder throughout the duration of the toll concession or contract.

- **Implementation and Monitoring:**

With the toll contract awarded, the successful bidder assumes responsibility for the implementation of toll operations as per the terms and conditions specified in the contract. This includes mobilizing resources, deploying staff, and setting up toll plazas and infrastructure in accordance with the agreed-upon timelines and requirements. Throughout the implementation phase, the authority establishes a robust monitoring and oversight mechanism to ensure compliance with contractual obligations, quality standards, safety regulations, and performance targets. Regular inspections, audits, and performance reviews are conducted to assess the contractor's performance and address any issues or deviations from the agreed-upon terms. Transparency, fairness, integrity, and adherence to legal and regulatory frameworks remain paramount throughout the entire procurement process to ensure a robust and competitive selection of the most qualified contractor for managing toll operations on highways in India.

2.2 Models to Collect Toll

Types of models under toll collection

- **Build-Operate-Transfer (BOT) Model:** In the Build-Operate-Transfer (BOT) model, private entities take on the responsibility to finance, construct, and operate roads within a specified concession period. They recover their

investments through tolls collected from road users or payments from the government during this period. Once the concession period ends, ownership of the road infrastructure typically transfers back to the government. This model allows private entities to recoup their initial investments and generate profits through toll revenues while assuming the risks associated with construction and operation.

- **Design-Build-Finance-Operate (DBFO) Model:** Under the Design-Build-Finance-Operate (DBFO) model, private entities undertake the comprehensive task of designing, constructing, financing, and operating road infrastructure. They are compensated based on performance metrics or toll revenues collected during the operational phase. Over time, ownership of the road assets gradually transfers to the government, usually after the concession period concludes. This model incentivizes private sector efficiency and innovation throughout the project lifecycle, as they are responsible for both construction quality and operational performance.
- **EPC Models in Toll Collection:** EPC (Engineering, Procurement, and Construction) models in toll collection streamline operations by assigning a single contractor with designing toll infrastructure, procuring necessary equipment, and implementing technology for efficient toll collection systems. This approach ensures a seamless process from design to operation, enhancing reliability and minimizing operational disruptions on the road network.
- **Hybrid Annuity Models:** Hybrid Annuity Models blend elements from various PPP structures to suit specific project requirements. In this model, the government contributes a portion of the construction costs upfront, while the private sector manages the design, construction, and maintenance phases. The private sector receives periodic payments or annuities during the concession period, incentivizing them to maintain high-quality infrastructure while reducing the financial burden on the government.
- **Operate Maintain Transfer (OMT):** The OMT model is designed to leverage private sector participation and efficiency while ensuring that the public sector retains ultimate control and ownership of the infrastructure. This approach aims to improve the quality and efficiency of toll collection and road maintenance and reduce the burden of operation of assets on the public sector and gain better financial realization by competitive bidding of annual toll contracts.
- **Toll Operate Transfer (TOT) Models:** Toll Operate Transfer (TOT) Models grant private entities the rights to operate and collect tolls on specific roads for a predetermined period. Alongside toll collection responsibilities, these entities manage the operation and maintenance of the road infrastructure. Revenue generated from tolls is often shared with the government as part of the agreement. This model allows private entities to leverage their expertise in road management while sharing financial risks and rewards with the government, contributing to improved infrastructure development and maintenance.

2.2.1 Operate Maintain Transfer

The "Operate, Maintain, Transfer" (OMT) model in toll collection is a public-private partnership framework used to manage toll roads and related infrastructure efficiently. In this model, a private concessionaire/toll operator makes weekly payments to NHAI/government body based on the contracted bid value. Such payments have to be made irrespective of the actual toll collected by the operator. The period of such contracts is usually upto 1 year. Here's a detailed explanation of each component:

- **Operate:** A private company or consortium is contracted to manage the daily operations of the toll collection system. This includes running the toll booths, handling electronic toll collection systems, customer service, and traffic management. The aim is to ensure smooth, efficient, and transparent toll collection processes. The operator uses their expertise and resources to handle operations effectively.

- **Maintain:** The operator is also responsible for the maintenance of the toll road and associated infrastructure. This includes regular inspections, repairs, and upgrades to ensure the road is in good condition and meets safety standards. To ensure proper maintenance and the longevity of the infrastructure, reduces disruptions for users, and maintains a high level of service quality.
- **Transfer:** At the end of the contract period, the private operator transfers the toll road and associated infrastructure back to the government or another designated public entity. This ensures that after the contract period, the public sector retains ownership and control over the infrastructure. It allows the government to reassess and potentially renegotiate terms or appoint a new operator.

Benefits of the OMT Model:

By leveraging private sector expertise, the OMT model can lead to more efficient toll collection and road management.

- **Investment:** Private companies invest in the infrastructure, which can reduce the financial burden on the government.
- **Maintenance:** The focus on maintenance helps keep the roads in good condition, benefiting users and extending the lifespan of the infrastructure.
- **Flexibility:** The model allows the government to periodically reassess the performance and terms of the contract, ensuring ongoing value and service quality.

Overall, the OMT model is a strategic approach to leveraging private sector efficiencies while ensuring that public assets are managed effectively and remain under public control.

2.2.2 Toll Operating Transfer (TOT)

In 2016, the TOT model was introduced by Cabinet Committee on Economic Affairs (CCEA). CCEA authorized NHAI to monetize publicly funded NH projects in 2016. In TOT model, developers are chosen through a fair and competitive bid process, assuring fairness and transparency in the selection.

The Toll-Operate-Transfer (TOT) model is a public-private partnership framework used to monetize operational highway projects, where the government leases these assets to private entities. In this model, a private concessionaire pays an upfront lump sum to the government for the right to operate, maintain, and toll the highway for a set period, typically 15 to 30 years. This arrangement enables the government to generate immediate revenue, which can be used for further infrastructure development, while transferring operational risks and maintenance responsibilities to the private sector. The concessionaire, in turn, benefits from the toll revenue but also assumes the risk of traffic volume fluctuations and maintenance costs.

The model promotes efficient management and maintenance through private sector involvement and sets performance standards to ensure road quality and safety. In India, the National Highways Authority of India (NHAI) has successfully implemented several TOT bundles, attracting significant investment from both domestic and international players.

The NHAI had begun an asset recycling project using the TOT concept. Through the TOT model, NHAI has been authorized to monetize publicly funded NH Projects that have been operational and collected tolls for at least one year.

The TOT model is a new idea for asset recycling that envisions long-term investment opportunities in the highway sector for Indian developers, as well as a platform built by Pension and Foreign Infrastructure and Pension Funds. The Toll-Operate-Transfer (TOT) model is an innovative structure for public-private partnerships that permits private companies to manage and run toll roads while the government maintains ownership, ensuring steady, long-term revenue for infrastructure projects. Because it may decrease operational risks through established toll revenue streams and provide

predictable financial returns, this strategy is attractive to institutional investors like pension funds and international infrastructure funds. Furthermore, by directing private investment into public assets, the TOT model makes it easier to upgrade and expand the infrastructure as needed. This promotes overall economic development and expansion while also improving the effectiveness and caliber of transportation services.

Benefits to the Government

- The developer's upfront payments in the TOT model provide the government with immediate revenues, serving as a vital financial source for highway expansion and maintenance in future.
- The TOT model encourages private participation by allowing private enterprises to invest in highway construction. The model attracts private investment which supplements government resources allowing for greater and efficient development. This also helps in reducing the load on the government's budget and enables them to grant funds to other critical sectors.
- Private enterprises are responsible for the development and operation of toll roads under the TOT concept. These firms usually have the skills, expertise and resources necessary for effective project execution which can result in faster project completion, minimizing the time and expense associated with road construction.
- The model will also assist the government in utilizing the corpus (produced from the proceeds of project monetization) to satisfy financing requirements for future development and O&M of roads in the country.

Road construction in India is expected to grow with new funding mechanisms by the National Highways Authority of India (NHAI), such as ToT (Toll Operate Transfer) and InvITs (Infrastructure Investment Trust) and interest from international funds (both for equity as well as debt). This has the potential to catapult India to the third-largest construction market globally.

2.2.3 HAM Projects & Recent Amendments

The Hybrid Annuity Model (HAM) is a public-private partnership used for highway development in India. It splits the project cost between the government and private sector, with the government funding up to 40% during construction and the private concessionaire covering the remaining 60%.

The government then makes annuity payments to the concessionaire over 15 to 20 years, covering investment and operational costs and including interest on the invested equity. This model reduces financial risk for private players, ensures steady revenue through annuity payments, and shares traffic risk with the government, promoting timely project execution and high infrastructure quality. The National Highways Authority of India (NHAI) has successfully implemented HAM for various highway projects.

Bidder Eligibility criteria of NH projects under Hybrid Annuity Mode (HAM):

- The ministry has amended the Standard RFP document of HAM Mode to incorporate provisions relating to Threshold Technical capacity prescribed for similar work experience for EPC works related to Major Bridges and Tunnels. This will enable NHAI to procure concessionaires having appropriate experience in Major Bridges/ Tunnels for projects being executed under HAM mode.
- Changes have been made in the relevant clauses of the model RFP and Model Concession Agreement (MCA) of the HAM project to allow the Lowest Quoted Bid Project Cost (BPC) as the basis for awarding the HAM Project and O&M cost to be fixed as in EPC projects. It was a much-needed demand of the industry as it will now bring out the winner immediately after the opening of financial bids in a transparent manner as in EPC mode of bidding. The earlier practice of making the award of the project in HAM after converting BPC and O&M quotes to NPV was not clear to many bidders.

- Changes have been made in the relevant clauses of the Model Concession Agreement of the BOT (Toll) project permitting the change of ownership from existing 2 years to 1 year after the Commercial Operation Date (COD). This move will free the equity/funds of construction companies for taking up other projects.

Amendments to HAM

Some of the major amendments To HAM after Model Concession Agreement (2020)

- Back-ending of premium payment
- Redefinition of project milestones
- Interest on annuity payments linked to average one-year MCLR of top 5 scheduled commercial banks +1.25%
- 10 milestone payments each equal to 4% of the bid project cost
- Lenders receive first charge on all receivables
- Deemed termination of projects
- Maintenance obligations
- Toll fee notification

Table 6: Major Amendments in payments under HAM after Model Concession Agreement

		Existing Clause	Proposed Clause																																		
Maintenance during Construction Period		The concessionaire will be responsible to maintain the existing highway and ensure that the road is pothole free during the construction.	In case of extension of scheduled completion date, the concessionaire will be liable to maintain the project highway for the extended period and will be entitled to reimbursement.																																		
Financial closure		The concessionaire shall achieve financial closure within 150 days from the date of agreement.	The concessionaire shall achieve financial closure for an amount not lower than either- i. Total Project Cost or ii. 10% less than (Estimated Project cost minus 40% of the bid project cost)																																		
Payment during Construction Period		The payment milestone for the release of payment during construction period shall be as under- <table border="1" data-bbox="407 1465 902 1734"> <thead> <tr> <th>Payment Milestone</th> <th>Achievement</th> </tr> </thead> <tbody> <tr><td>1st</td><td>10% physical progress</td></tr> <tr><td>2nd</td><td>30% physical progress</td></tr> <tr><td>3rd</td><td>50% physical progress</td></tr> <tr><td>4th</td><td>75% physical progress</td></tr> <tr><td>5th</td><td>90% physical progress</td></tr> </tbody> </table>	Payment Milestone	Achievement	1st	10% physical progress	2nd	30% physical progress	3rd	50% physical progress	4th	75% physical progress	5th	90% physical progress	The payment milestone for the release of payment during construction period shall be as under- <table border="1" data-bbox="930 1371 1487 1824"> <thead> <tr> <th>Payment Milestone</th> <th>Achievement</th> </tr> </thead> <tbody> <tr><td>1st</td><td>5% physical progress</td></tr> <tr><td>2nd</td><td>10% physical progress</td></tr> <tr><td>3rd</td><td>20% physical progress</td></tr> <tr><td>4th</td><td>30% physical progress</td></tr> <tr><td>5th</td><td>40% physical progress</td></tr> <tr><td>6th</td><td>50% physical progress</td></tr> <tr><td>7th</td><td>60% physical progress</td></tr> <tr><td>8th</td><td>70% physical progress</td></tr> <tr><td>9th</td><td>80% physical progress</td></tr> <tr><td>10th</td><td>90% physical progress</td></tr> </tbody> </table>	Payment Milestone	Achievement	1st	5% physical progress	2nd	10% physical progress	3rd	20% physical progress	4th	30% physical progress	5th	40% physical progress	6th	50% physical progress	7th	60% physical progress	8th	70% physical progress	9th	80% physical progress	10th	90% physical progress
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7th	60% physical progress																																				
8th	70% physical progress																																				
9th	80% physical progress																																				
10th	90% physical progress																																				
Debt Due Payment	Payment Milestone	Basic calculation for termination payment	Payment Milestone Basic of calculation for termination payment																																		

Existing Clause		Proposed Clause	
1st	90% debt due or 1.35% of bid project cost, whichever is lower	1st	90% debt due or 0.68% of bid project cost, whichever is lower
2nd	90% debt due or 9.45% of bid project cost, whichever is lower	2nd	90% debt due or 1.35% of bid project cost, whichever is lower
3rd	90% debt due or 17.55% of bid project cost, whichever is lower	3rd	90% debt due or 5.4% of bid project cost, whichever is lower
4th	90% debt due or 30.38% of bid project cost, whichever is lower	4th	90% debt due or 9.45% of bid project cost, whichever is lower
5th	90% debt due or 36.45% of bid project cost, whichever is lower	5th	90% debt due or 13.5% of bid project cost, whichever is lower
		6th	90% debt due or 17.55% of bid project cost, whichever is lower
		7th	90% debt due or 21.6% of bid project cost, whichever is lower
		8th	90% debt due or 25.65% of bid project cost, whichever is lower
		9th	90% debt due or 29.70% of bid project cost, whichever is lower
		10th	90% debt due or 33.75% of bid project cost, whichever is lower

Source: Ministry of Road Transport and Highways of India, CareEdge Research

Amendments to BOT

MoRTH has issued several amendments in Build Operate Transfer (BOT) road projects in March 2024. The amendments are in following categories:

- Change in Ownership
- Performance Security
- Construction and Equity Support
- Buyback of projects by NHAI
- Terminal Payments

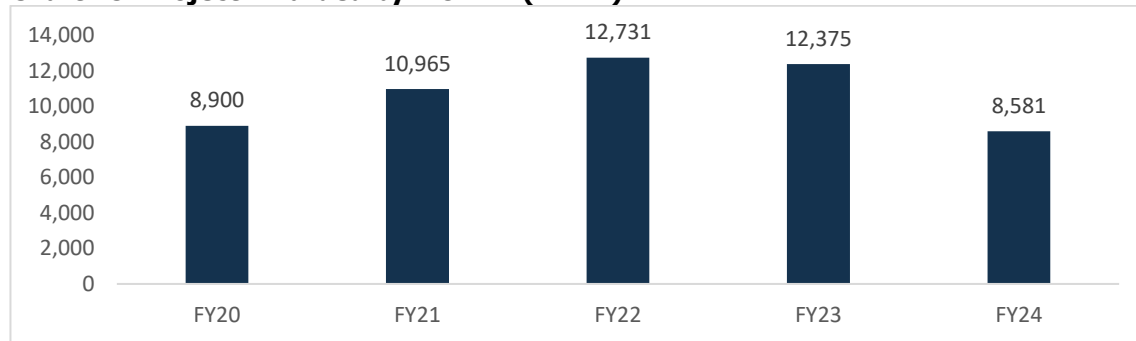
2.2.4 Ratio of EPC and HAM projects over the years and how it will change

National Highways play a very important role in the economic and social development of India as it enables efficient movement of freight and passengers and improving access to markets. Ministry of Road Transport and Highways of

India (MoRTH) and its implementing agencies have undertaken multiple initiatives in the past decade to augment the capacity of the National Highway infrastructure in India. India has over 66 lakh km of road network, which is the second largest in the world. This comprises National Highways, Expressways, State Highways, Major District Roads, Other District Roads and Village Roads. The length of various categories of roads is as under:

- National Highways: 1,46,145 km
- State Highways: 1,79,535 km
- Other Roads: 63,45,403 km

Chart 18: Project Awarded by MORTH (in Km)



Source: Ministry of Road Transport and Highways of India, CareEdge Research

Note: Data for FY24 are provisional

The government's steadfast commitment to infrastructure development has been highlighted by a significant increase in project awarding following Covid-19, particularly during FY22-FY23. This period accounted for nearly 50% of the projects awarded in the last five years ending in FY23. However, FY24 witnessed a downturn, with declined project awarding. Decline in awards was steeper than expected, primarily due to pending approval of revised cost from cabinet towards projects under Bharatmala Pariyojana. A decrease in awards was already anticipated due to legislative elections and the subsequent imposition of the code of conduct. However, these factors combined have led to a further reduction in the pace of project awards.

Table 7: Mode-wise Projects Awarded by NHAI

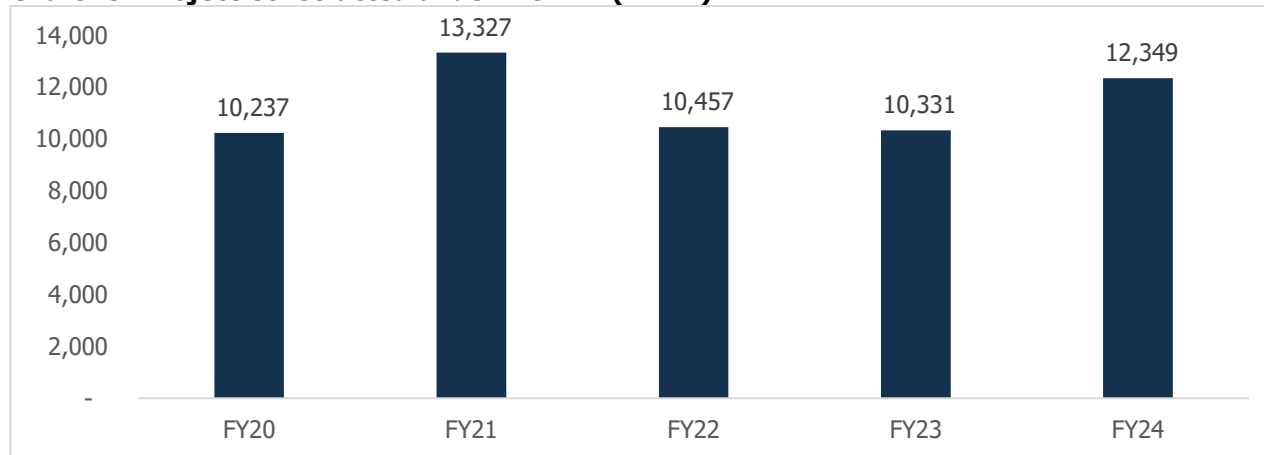
Mode	2021-22	2022-23	2023-24
HAM	3,493	3,032	726
EPC	2,411	4,742	2,824
BOT Toll	67	33	52
Total	5,971	7,807	3,602

Source: NHAI, CareEdge Research

The OMT projects are awarded after construction of Highways under EPC contracts. Overall EPC wise projects awarded are nearly 75% as of FY24. The growth of OMT business is due to gain in market share of EPC projects awarded by NHAI.

2.2.5 Trend in Annual National Highway Execution (in kms)

Chart 19: Project Constructed under MORTH (in Km)



Source: Ministry of Road Transport and Highways of India, CareEdge Research

Note: Data for FY24 are provisional

2.2.6 Number of live tenders under different models

There are a total of 58,919 ongoing projects under various contract models, with different percentages of shares. Among these, the Hybrid Annuity Model (HAM) holds the largest share, with 24,415 projects, constituting 41.44% of the total. Build-Operate-Transfer (BOT) projects follow closely, with 23,144 projects, accounting for 39.28%.

Table 8: Number of live contracts

Contract name	Ongoing projects	% share
EPC	5,004	8.49
HAM	24,415	41.44
BOT	23,144	39.28
DBFOT	3,841	6.52
DBFOT (toll)	2,516	4.27
Total	58,919	100.00

Source: Projects Today, CareEdge Research

Engineering, Procurement, and Construction (EPC) contracts represent 8.49% of the total, with 5,004 ongoing projects. Additionally, there are 3,841 projects under the Design-Build-Finance-Operate-Transfer (DBFOT) model, making up 6.52% of the total, while DBFOT (toll) projects amount to 2,516, or 4.27%. These figures reflect the distribution of ongoing projects across various contract models in infrastructure development.

2.2.7 Toll road projects – live and planned

For understanding the overview of the projects taking place in the toll industry in India, toll road projects in the planning, nascent and under execution stage are given in the below tables. The data is presented state wise to get the summary of projects of the toll industry in India. Toll projects in Madhya Pradesh in the nascent, planning and under execution stages are given below too.

Table 9: State wise projects in the planning and nascent stage

State	Cost (Rs. Crore)	Total kms
Karnataka	51,359.48	2,107.61
Madhya Pradesh	27,241.70	2,594.04
Uttar Pradesh	24,886.00	1,270.21
Gujarat	18,689.80	818.31
Kerala	17,737.94	685.01
Bihar	16,900.73	617.83
Karnataka,Maharashtra	15,000.00	1,100.00
Jharkhand	13,756.23	603.66
Chhattisgarh	6,772.30	877.61
Delhi,Haryana,Rajasthan	6,350.00	195.10
Madhya Pradesh,Rajasthan,Uttar Pradesh	4,067.79	88.4
Himachal Pradesh	3,991.60	72.81
Madhya Pradesh	3,865.57	968.15
Karnataka	3,312.00	172.09
Haryana	3,108.62	163.30
Jammu & Kashmir	2,515.72	NA
Haryana,Uttar Pradesh	1,582.66	69.11
Multi States	1,500.00	NA
Andhra Pradesh	1,115.54	90.84
Madhya Pradesh,Uttar Pradesh	1,012.69	45.99
Madhya Pradesh,Maharashtra	564.16	30.28
Karnataka,Tamil Nadu	524.48	23.44
Bihar,Uttar Pradesh	444.18	3.30
Telangana	388	35.4
Gujarat	199.00	26.00
Haryana	111.00	18.50
Others	247,063.65	96,484.08
Total	474,060.84	109,161.07

Source: Projects Today, CareEdge Research

Table 10: Projects in Madhya Pradesh under planning and nascent stage

Company Name	Project Name	Cost (Rs. Crore)	Total kms
National Highways Authority of India	Road Upgradation (Rajmarg Crossing - Jabalpur) Project	2,550.76	299.71
Madhya Pradesh Road Devp. Corpn. Ltd.	Road Upgradation (Ujjain-Jhalawad-MP/Rajasthan Border) Project	1,405.96	134.00
National Highways Authority of India	Chambal Expressway (Sada ka Pada-Chhavar) Project [Atal Progressway PKG-3]	1,359.43	61.30
National Highways Authority of India	Chambal Expressway (Chhavar-Jhundpura) Project [Atal Progressway PKG-4]	1,287.88	50.60
National Highways Authority of India	Chambal Expressway (Jhundpura-Maithana) Project [Atal Progressway PKG-5]	1,180.83	59.00
National Highways Authority of India	Chambal Expressway (Maithana-Kuretha) Project [Atal Progressway PKG-6]	896.83	47.95
Madhya Pradesh Road Devp. Corpn. Ltd.	Road Upgradation (Rewa-Katni) Project	888.00	119.40
National Highways Authority of India	Road Upgradation (Budhni-Badi) Project	870.80	67.83
National Highways Authority of India	Road Upgradation (Kannod-Ashta) Project	703.07	48.60
Madhya Pradesh Road Devp. Corpn. Ltd.	Road Upgradation (Rewa-Sidhi) Project	677.21	71.56
Government of India, Ministry of Road Transport & Highways	Road Upgradation (Shyampur-Sabargarh) Project	629.94	55.05
Madhya Pradesh Road Devp. Corpn. Ltd.	Road Upgradation (Gairatganj-Silwani-Bareli-Pipariya) Project	438.86	105.00
Madhya Pradesh Road Devp. Corpn. Ltd.	Road Upgradation (Basoda-Gurod-Somwara-Aenchda-Imaliya-Sironj) Project	105.00	35.00
Madhya Pradesh Road Devp. Corpn. Ltd.	Road Upgradation (Dhar-Gujri) Project	122.50	49.00
Madhya Pradesh Road Devp. Corpn. Ltd.	Road Upgradation (Bandol-Chorai) Project	151.20	50.40
Madhya Pradesh Road Devp. Corpn. Ltd.	Road Upgradation (Semaria-Ramgarh-Shahpur-Hanumna) Project	412.50	165.00
Madhya Pradesh Road Devp. Corpn. Ltd.	Road Upgradation (Jhansi-Bameetha) Project	615.00	82.00
Madhya Pradesh Road Devp. Corpn. Ltd.	Road Upgradation (Churhat-Amility-Chitrangi) Project	959.37	383.75
Madhya Pradesh Road Devp. Corpn. Ltd.	Road Upgradation (Indore-Edelabad-MP/MH Border) Project	1,500.00	203.00
National Highways Authority of India	Agra-Gwalior Highway (Deori-Susera) Project	4,067.79	88.40
Madhya Pradesh Road Devp. Corpn. Ltd.	Road Upgradation (Ratlam-Jhabua) Project	423.05	99.82
Others		272,509.01	14,499.84
Total		293,754.99	16,776.21

Source: Projects Today, CareEdge Research

Table 11: State wise projects under execution (to be completed till 2029)

New unit		
State	Cost (Rs. Crore)	Total kms
Uttar Pradesh	22,077.09	539.26
Andhra Pradesh	18,705.69	560.53
Haryana	13,628.55	251.98
Maharashtra	11,912.70	233.50
Punjab	10,194.66	344.69
Jammu & Kashmir	6,093.63	84.41
Odisha	5,788.19	190.87
Karnataka	5,614.09	194.60
Gujarat	5,579.94	92.50
Andhra Pradesh,Tamil Nadu	5,059.29	140.10
Tamil Nadu	4,837.31	81.71
Chhattisgarh	4,537.97	170.21
Himachal Pradesh	4,372.14	45.58
Madhya Pradesh	3,763.75	247.24
Others	27,676.03	803.70
Total	149,841.03	3,980.88
Rehabilitation		
State	Cost (Rs. Crore)	Total kms
Himachal Pradesh	812.75	24.20
Madhya Pradesh	253.18	100.75
Total	1,065.93	124.95
Renovation/Modernisation		
State	Cost (Rs. Crore)	Total kms
Kerala	25,398.88	381.96
Maharashtra	19,222.15	885.22
Bihar	16,894.31	466.25
Tamil Nadu	13,409.10	447.40
Uttar Pradesh	9,768.74	471.50
Andhra Pradesh	8,112.06	302.53
Jharkhand	7,022.01	386.65
Gujarat	6,733.69	349.89
Karnataka	6,415.78	409.05
Madhya Pradesh	5,796.19	586.77
Others	40,526.99	2,034.68
Total	159,299.90	6,721.90

Source: Projects Today, CareEdge Research

Table 12: Projects in Madhya Pradesh under execution

Company Name	Project name	Cost (Rs. Crore)	Total kms
GR Ujjain Badnawar Highway Pvt. Ltd.	Road Upgradation (Ujjain-Badnawar, From 29.6 km to 96.00 km) Project	1,352.56	69.10
Megha Engineering & Infrastructures Pvt. Ltd.	Road Upgradation (Tejainagar-Balwara) Project	1,162.80	33.40
Nanasa Pidgaon Road Pvt. Ltd.	Road Upgradation (Nanasa-Pidgaon) Project [Indore-Harda Package-3]	1,146.22	47.44
Shreeji Infrastructure India Pvt. Ltd.	Road Upgradation (Raghogarh-Nanasa) Project [Indore-Harda Package-2]	1,081.51	63.67
KCC Buildcon Pvt. Ltd.	Road Upgradation (Dhangaon-Boregaon) Project	806.00	58.00
Bansal Construction Works Pvt. Ltd.	Highway (Vidisha-Hinotiya-Morikori) Project [Package-I]	787.86	47.47
GHV (India) Pvt. Ltd.	Ujjain-Garoth Highway (Chandesari-Khedakhajuriya) Project [Package-I]	678.22	42.15
Ravi Infrabuild Projects Pvt. Ltd.	Ujjain-Garoth Highway (Khedakhajuria-Suhagadi) Project [Package-II]	637.94	47.80
MKC Infrastructure Ltd.	Ujjain-Garoth Highway (Suhagada-Bardiya Amra) Project [Package-III]	578.22	46.15
Sharda Construction & Corpn. Pvt. Ltd.	Road Upgradation (Chhapiheda-Nalkheda) Project [Package 54]	276.59	66.71
Raj Corpn. Ltd.	Road Upgradation (Kailaras-Jaura) Project	178.87	62.80
Gour Road Tar Coat Pvt. Ltd.	Road Upgradation (Mehandwani-Chakdehi) Project [Package 37]	172.82	51.53
Shreeji Infrastructure India Pvt. Ltd.	Road Upgradation (Badwar-Tamra-Sitapur-Mauganj) Project	171.28	57.35
Velji Ratna Sorathia Infra Pvt. Ltd.	Road Upgradation (Garhi-Ahmadpur) Project	170.22	18.60
SGPR Road Project Pvt. Ltd.	Road Upgradation (Padmi-Ramnagar-Ghugri-Salwaha-Amarpur) Project	153.30	51.10
SGPR Road Project Pvt. Ltd.	Road Upgradation (Padmi-Ramnagar-Ghunghri-Salvah) Project - Rehabilitation	133.37	51.34
Shreeji Infraspace Pvt. Ltd.	Road Upgradation (Badol-Chourai Road) Project - Rehabilitation	119.81	49.41
Shreeji Infraspace Pvt. Ltd.	Road Upgradation (Sagar-Rehli) Project	103.65	42.20
R. K. Jain Infra Projects Pvt. Ltd.	Road Upgradation (Bhind-Etwa-Kosan-Ater) Project [Package 33]	101.88	28.54

Source: Projects Today, CareEdge Research

2.3 Vehicle population's historic growth

Table 13: Annual number of vehicles registered

Category	FY19	FY20	FY21	FY22	FY23	FY24	FY25 (Apr-Jun)
Four Wheeler (Invalid Carriage)	1,494	1,595	1,534	2,213	2,947	3,677	1,087
Heavy Goods Vehicle	329,857	237,235	94,096	186,735	281,090	297,165	82,512
Heavy Motor Vehicle	4,901	5,295	3,809	4,808	5,867	5,581	1,389
Heavy Passenger Vehicle	27,744	37,331	4,796	8,492	16,229	25,482	9,377
Light Goods Vehicle	685,014	657,919	428,359	486,609	608,008	598,646	157,870
Light Motor Vehicle	3,601,403	3,395,961	3,264,572	3,600,575	4,258,192	4,502,340	1,221,178
Light Passenger Vehicle	270,037	240,906	66,710	92,262	191,445	324,652	110,382
Medium Goods Vehicle	44,473	42,048	24,714	37,426	36,944	37,626	10,658
Medium Motor Vehicle	14,763	15,498	17,053	14,824	13,354	11,092	2,841
Medium Passenger Vehicle	20,266	23,948	3,872	5,347	19,404	28,827	11,887
Other Than Mentioned Above	39,973	42,807	44,070	43,863	55,307	74,250	21,007
Three Wheeler(Nt)	20,837	21,598	7,233	5,618	19,913	1,353	275
Three Wheeler(T)	742,106	791,242	281,989	415,901	765,450	1,165,900	321,717
Two Wheeler (Invalid Carriage)	12,283	11,024	6,691	11,331	16,120	24,645	3,688
Two Wheeler(Nt)	19,468,856	19,032,118	13,252,931	13,505,548	16,007,560	17,509,003	5,261,269
Two Wheeler(T)	19,819	18,165	5,483	8,562	19,458	16,391	4,594
Total	25,303,826	24,574,690	17,507,912	18,430,114	22,317,288	24,626,630	7,221,731

Source: Ministry of Road Transport and Highways, Parivahan Seva, CareEdge Research

Note:

- Four Wheeler (Invalid Carriage): typically refers to a vehicle designed to assist individuals with disabilities or mobility impairments.
- Three Wheeler (NT): typically refers to a type of vehicle that has three wheels and does not require a special license to operate.
- Three Wheeler (T): typically refers to a type of vehicle that has three wheels and is designed primarily for transportation purposes.
- Two Wheeler (Invalid Carriage): This refers to a two-wheeled vehicle adapted or modified to accommodate individuals with disabilities or mobility impairments.
- Two Wheeler (NT): it refers to a two-wheeled vehicle that does not require a special license to operate, similar to the "NT" designation used for three-wheelers in certain regions
- Two Wheeler (T): typically refers to a type of vehicle that has three wheels and is designed primarily for transportation purposes.

Over the span of fiscal years from FY19 to FY24, the total number of vehicles across all categories has exhibited a dynamic trend. Starting at a peak of 25,308,605 vehicles in FY19, there was a slight dip in FY20 to 24,579,433 vehicles. This decrease could be attributed to various factors such as economic slowdown or shifts in consumer behavior. However, FY21 witnessed a significant drop to 17,488,596 vehicles, likely influenced by pandemic-related disruptions, economic downturn, or regulatory changes impacting vehicle sales and production. Despite this setback, there was a moderate rebound in FY22 to 18,418,006 vehicles, indicating a partial recovery from the previous year's downturn. The trend continued upward in FY23, reaching 22,317,998 vehicles, possibly reflecting economic recovery, increased consumer confidence, or market stabilization. FY24 witnessed further growth to 24,617,502 vehicles, signaling a return to pre-pandemic levels and continued expansion of the automotive sector. These fluctuations underscore the industry's resilience and highlight the importance of adaptability to navigate through evolving market dynamics within the automotive sector. Growth in passenger vehicles

➤ Passenger Vehicles

This is the second-largest segment in terms of sales with 18% market share in FY23. The trend of domestic sales of passenger vehicles in India is presented below:

Table 14: Market Trends of passenger vehicles in India

Sales (in Units)	2017-18	2018-19	2019-20	2020-21	2021-22	2022-23
Domestic Sales	32,88,581	33,77,389	27,73,519	27,11,457	30,69,523	38,90,114

Source: SIAM, CareEdge Research

The sales data table illustrates the performance of a company in terms of domestic sales and exports over a six-year period from 2017-18 to 2022-23. In terms of domestic sales, there was a slight increase from 2017-18 to 2018-19, followed by a downward trend until 2020-21, after which a notable recovery and significant growth were observed in 2021-22 and 2022-23. Overall, the trend suggests fluctuations in domestic sales, with recovery and growth observed in the later years.

➤ Commercial Vehicles

This segment is considered a lifeline for the economy as about two-thirds of goods and 87% of the passenger traffic in the country moves via road. The growth of this segment is closely related to the industrial activity in the economy. The trend of domestic sales of commercial vehicles in India is presented below:

Table 15: Market Trends of commercial vehicles in India

Sales (in Units)	2017-18	2018-19	2019-20	2020-21	2021-22	2022-23
Domestic Sales	8,56,916	10,07,311	7,17,593	5,68,559	7,16,566	9,62,468

Source: SIAM, CareEdge Research

The trajectory of domestic sales reveals a series of fluctuations across the years. Notably, from 2017-18 to 2018-19, there was a notable uptick in domestic sales, witnessing an increase from 8,56,916 units to 10,07,311 units. However, this growth trend reversed in the subsequent fiscal year, 2019-20, marked by a distinct decline in units sold to 7,17,593. The downward trend persisted in 2020-21, with domestic sales further plummeting to 5,68,559 units. Nevertheless, a promising turnaround emerged in 2021-22, characterized by a rebound in domestic sales to 7,16,566 units. This positive momentum carried forward into 2022-23, as domestic sales experienced a significant surge, reaching 9,62,468 units.

2.4 Toll Traffic

2.4.1 Current state and annual addition in highway length tolled

Over the past nine years, the Ministry of Road Transport and Highways (MoRTH) has undertaken significant initiatives to bolster India's national highway infrastructure, playing a pivotal role in the nation's economic and social advancement.

Notable achievements include a 60% expansion of the national highway network to 1,46,145 kilometers by 2023, with a substantial increase in four-lane and above highways and a reduction in narrower highways. The average construction pace has surged by 143%, while expenditure is expected to rise substantially. Progress has been made on port connectivity projects, and special campaigns have met their objectives. New programs like the Bharat New Car Assessment Programme enhance vehicle safety, while the Vehicle Scrapping Policy and mobile applications like Rajmarg Yatra and NHA1 One demonstrate a commitment to innovation and efficiency. Relief measures amidst the COVID-19 pandemic and the widespread implementation of Vahan and Sarathi further underscore MoRTH's dedication to infrastructure development and public service.

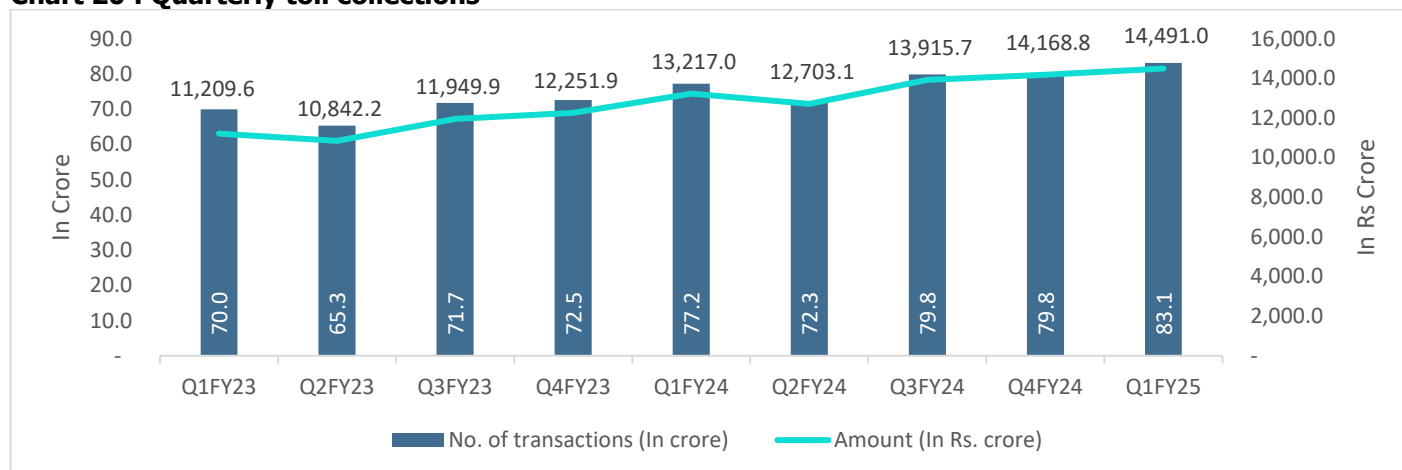
Table 16: Annual toll collections

Financial Year	No. of Transactions (in crore)	Amount (in crore)
FY18	12.7	3,400
FY19	25.4	5,800
FY20	58.3	11,300
FY21	132.7	22,800
FY22	244.1	38,100
FY23	340.2	54,100
FY24	384.0	65,100
FY24 (Apr-Jun)	95.64	15,781
FY25 (Apr-Jun)	100.99	17,279

Source: NPCI, CareEdge Research

The table provides data on the number of transactions and the amount for toll collections on highways from fiscal year (FY) 2018 to FY 2025. The number of transactions and the amount collected have shown a consistent upward trend over the years, indicating a significant increase in highway usage and toll revenue generation. For instance, the number of transactions has increased from 12.7 crore in FY18 to 384.0 crore in FY24, with a corresponding increase in the amount collected from Rs. 3,400 crore to Rs. 65,100 crore. This growth reflects the expansion and improvement of the highway network, leading to increased traffic and usage. In terms of annual additions in highway length tolled, there has been a continuous expansion of the toll network, with the length of highways being tolled increasing each year. This expansion signifies ongoing infrastructure development efforts aimed at enhancing connectivity and facilitating smoother transportation across the country.

Chart 20 : Quarterly toll collections



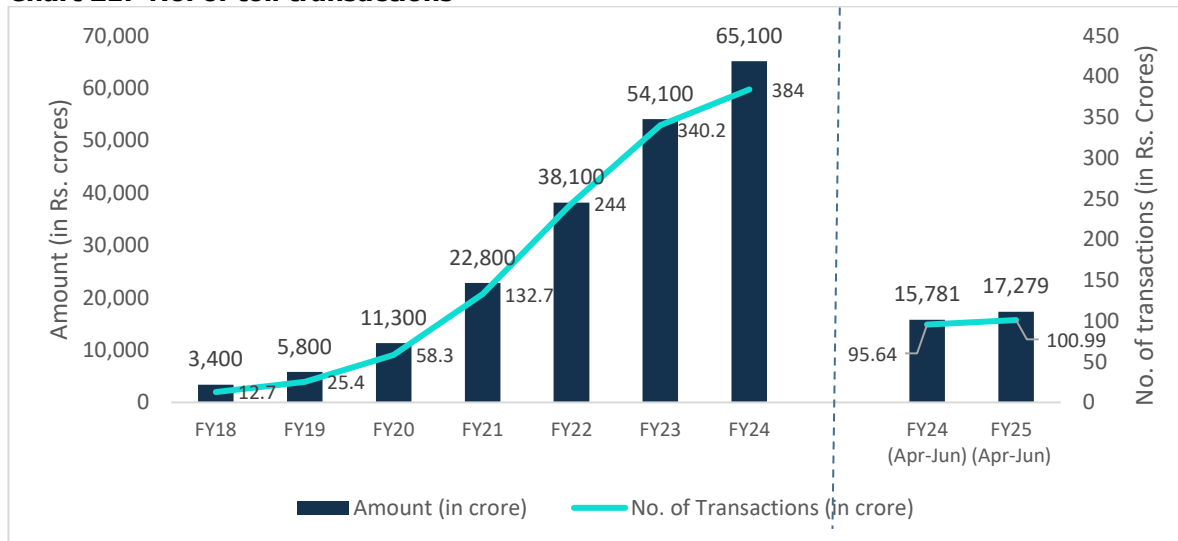
Source: NPCI, CareEdge Research

The toll collection industry in India often faces a decline during the second quarter of the financial year, largely attributed to the monsoon season. This seasonal fluctuation is closely tied to India's varied geographical landscapes, where heavy rainfall and adverse weather conditions disrupt traffic flow, particularly in regions prone to flooding and poor road conditions. As a result, the monsoon's intensity and duration directly influence toll revenues, with certain regions experiencing sharper drops in collections compared to others, reflecting the diverse climatic patterns across the country.

2.4.2 Review of toll traffic at National Highway

The toll transactions data showcases a consistent upward trajectory in both the number of transactions and the corresponding amounts across fiscal years. Starting from FY18 with 12.7 crore transactions and an amount of 3,400 crore, the figures nearly doubled in FY19, indicating an increasing trend in toll usage. This pattern continued into FY20 and FY21, with significant increases in both transactions and amounts, suggesting a growing reliance on toll systems for transportation needs.

Chart 21: No. of toll transactions



Source: NPCI, CareEdge Research

The momentum persisted in subsequent years, notably in FY22 and FY23, where transactions more than doubled, reflecting a continuous rise in toll infrastructure utilization. In FY24, transactions reached 384 Crore with an amount of Rs. 65,100 Crore, showcasing substantial growth in toll transactions and revenue generation. In FY25, for the months of April to June collected Rs. 15,781 Crore with number of transactions at 95.64 Crore, the upward trend appears to be persistent, underscoring the sustained growth in toll system usage. This consistent increase in toll transactions and revenue highlights the evolving transportation landscape and the importance of toll systems in facilitating efficient and convenient travel.

2.4.3 Key growth drivers for toll traffic at national highways

- **Infrastructure Development:** The construction of new roads, highways, bridges, and expressways increases connectivity between cities and regions, encouraging more vehicles to use toll roads as they offer better quality and faster travel compared to alternative routes.
- **Growth of national expressways:** The Indian government is planning to create a separate authority for expressways, distinct from the NHAI. This is part of the Road Transport and Highways Ministry's 100-day agenda.

The new authority will manage expressways, which have different construction codes and tolling systems. This move supports the Vision 2047 plan to develop 50,000 kilometers of access-controlled expressways, ensuring any location in India is within 100-125 kilometers of one. Currently, there are 2,913 kilometers of expressways.

- **Economic Growth and Trade:** National highways serve as vital routes for the movement of goods and people across the country. As India's economy grows and trade activities expand, the demand for efficient transportation increases, leading to higher traffic volumes on national highways. National highways connect major industrial and commercial hubs, ports, and economic centers. As industrial and commercial activities flourish, there is a greater need for transportation of raw materials, finished goods, and personnel, resulting in increased toll traffic on these highways.
- **Government Policies and Investments:** Government policies aimed at promoting infrastructure development, including highways, stimulate investment in road construction and maintenance. Public-private partnership (PPP) models for highway development and toll operation incentivize private sector participation, leading to the expansion of toll roads and increased toll traffic.
- **Technological Advancements:** Implementation of electronic toll collection (ETC) systems such as FASTag improves toll collection efficiency, reduces congestion at toll plazas, and enhances the overall travel experience for motorists. The convenience of electronic toll payment encourages more motorists to use national highways, thereby boosting toll traffic. In the new ANPR technology, vehicles are already equipped with GPS device that determines their position on the road. This will help in calculating the distance the vehicle travels and is tolled according to the distance covered, and the amount is automatically deducted from the driver's account.
- **Improved Connectivity and pick-up in tourism:** Toll roads often offer better connectivity between major cities, tourist hubs, ports, and religious places. This enhanced connectivity attracts more traffic as businesses and individuals opt for faster and safer transportation options. National highways are often preferred for their better road quality, safety features, and faster travel times compared to state or district roads.
- **ANPR-based system:** Automatic Number Plate Recognition (ANPR) technology plays a crucial role in modern toll collection systems. It employs high-resolution cameras to capture vehicle number plates, even under challenging conditions. The captured images are processed using Optical Character Recognition (OCR) to convert them into a digital format. This information is then matched with a database of registered vehicles to automatically deduct the toll fee. If no match is found, the system can issue a violation notice or bill to the vehicle owner, ensuring efficient enforcement and penalizing toll evaders. In 2022, pilot implementation of the Automatic Number Plate Recognition (ANPR) based system has been implemented along stretches of Delhi-Meerut Expressway. In this system, applicable user fees is deducted from FASTag based on the entry and exit of the vehicles as captured by ANPR cameras installed at various entry and exit locations. NHAI has appointed a consultant agency for detailed study on Automatic Number Plate Recognition (ANPR) technology.
- **GPS Based Technology:** India is set to implement a GPS-based toll collection system, using GNSS technology to track vehicles and calculate tolls based on distance traveled.

These factors collectively drive the growth of toll traffic at national highways in India, making toll roads an essential component of the country's transportation infrastructure.

2.4.4 Outlook of toll traffic on National Highways

The outlook for toll traffic on national highways looks promising, showing a consistent upward trend in both the number of transactions and the derived revenue over the years.

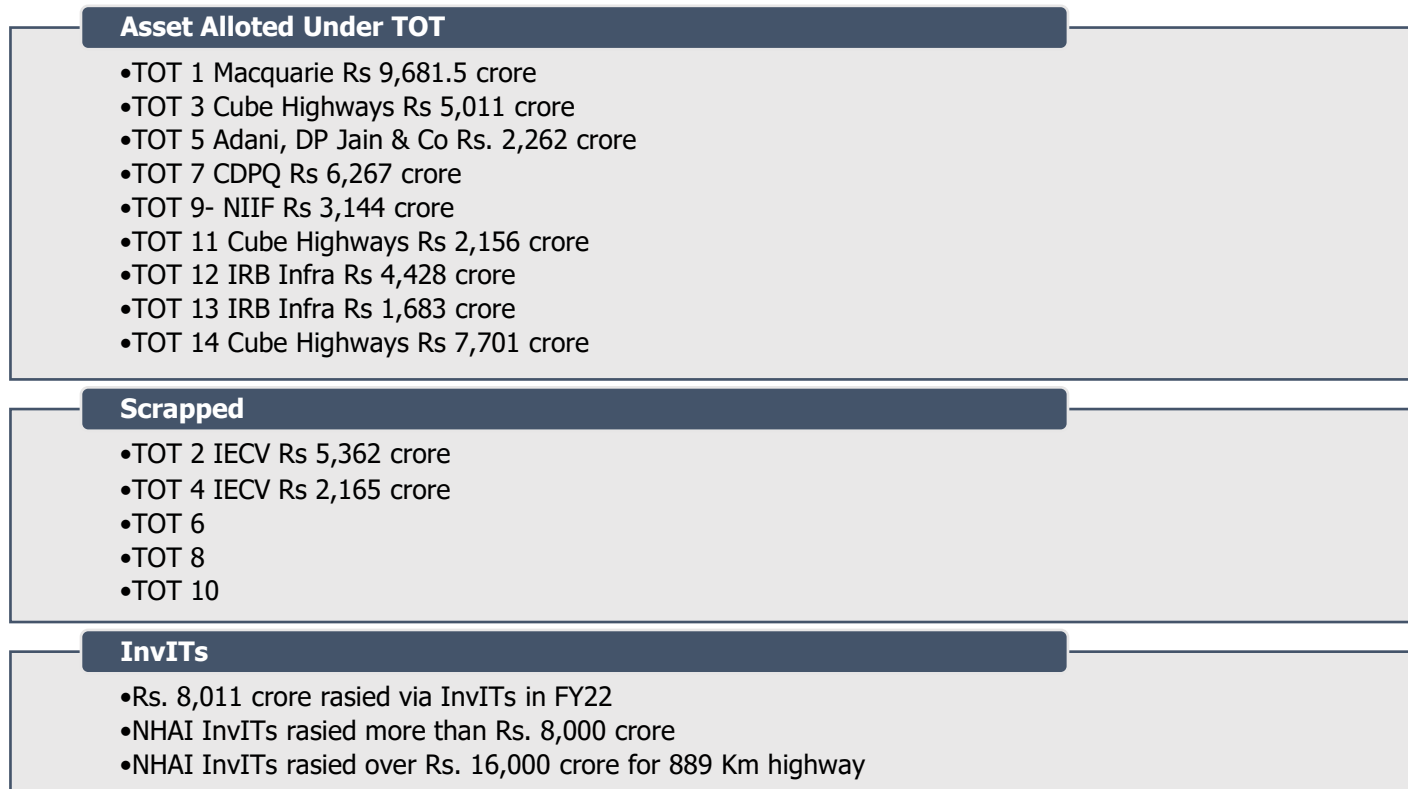
The Bharatmala Pariyojana, a comprehensive road development initiative, aims to enhance connectivity across India by constructing Economic Corridors, Inter-Corridors, and feeder roads. Phase-I, approved by the Cabinet Committee on Economic Affairs, targets the development of 34,800 km of roads, funded through various sources like toll revenue, budgetary support, and private sector investment. Furthermore, initiatives to improve connectivity for Char-Dham in Uttarakhand have been initiated, with ongoing works spanning 589 kilometers, indicating significant progress in infrastructure development nationwide.

The significant increases in toll transactions and amounts over the years indicate growing usage of toll roads, likely driven by factors such as economic growth, infrastructure development, and urbanization.

2.5 Key government regulations and initiatives in the industry

- Under the TOT Model the concessionaire pays an upfront lump sum to the government/NHAI for a specified period of 15-30 years. During this time, the concessionaire is responsible for operations and maintenance. NHAI has completed 6 rounds of road asset monetization through TOT mode since its launch in 2018, raised Rs. 26,366 crores. Letters of Award (LoAs) for TOT bundles 11, 12, 13, and 14 were issued by NHAI within a day of opening financial bids. It's expected to raise a total of Rs. 42,334 crores by FY 2023-24.
- The InvIT Model involves NHAI setting up an InvIT under SEBI regulations, with NHAI holding a 16% stake alongside main investors like CPPIB and OTHP. InvIT functions as a pooled investment vehicle issuing units to investors, managed by three entities: Trustee, Investment Manager, and Project Manager. Two rounds totaling 635 km have been finalized, realizing a concession fee of Rs. 10,200 crores. Another Rs. 15,000 crore is expected in FY 2023-24.
- In the Securitization through SPV Model, NHAI creates a Special Purpose Vehicle (SPV/DME) by bundling road assets and securitizing future user fees. NHAI collects tolls, maintains road assets, and transfers payments periodically to the SPV to service debt obligations. NHAI has raised around Rs. 37,000 crore through this method (specifically for the Delhi Mumbai Expressway) and anticipates raising another Rs. 6,000 crore in FY 2023-24.

Chart 22: Investments under Toll-Operate-Transfer (TOT) model

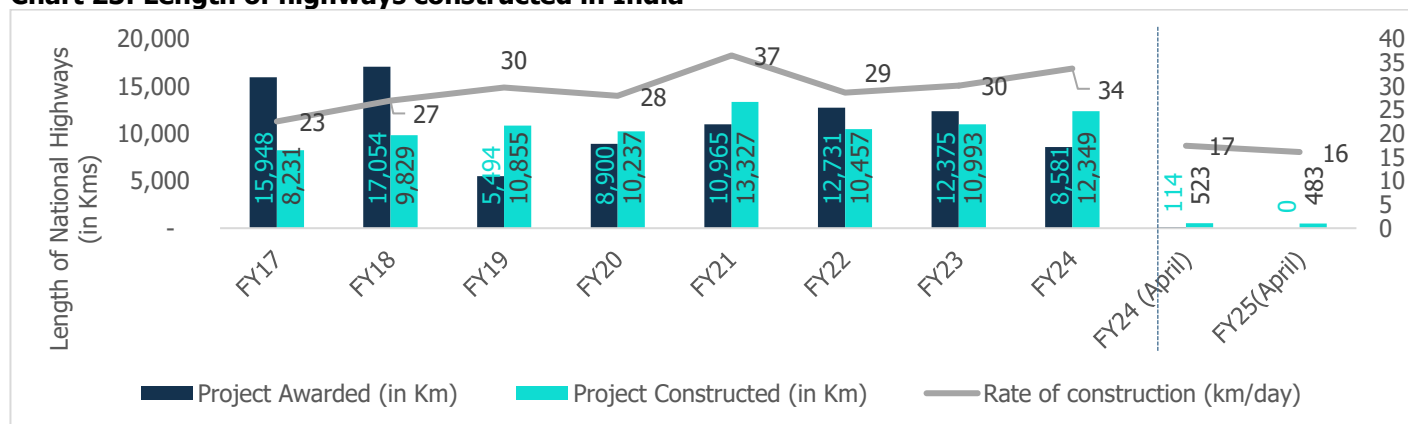


Source: CareEdge Research

2.6 Outlook on investments in National highways

The government is driving infrastructure development through initiatives like the National Infrastructure Pipeline (NIP), supported by programs such as 'Make in India' and the production-linked incentives (PLI) scheme. With a projected investment of around INR 1,25,25,000 crore for FY 2020-2025, the NIP aims to improve nationwide infrastructure and attract domestic and foreign investment. Initially comprising 6,835 projects, the NIP now includes over 9,000 projects across 34 sectors.

Chart 23: Length of highways constructed in India

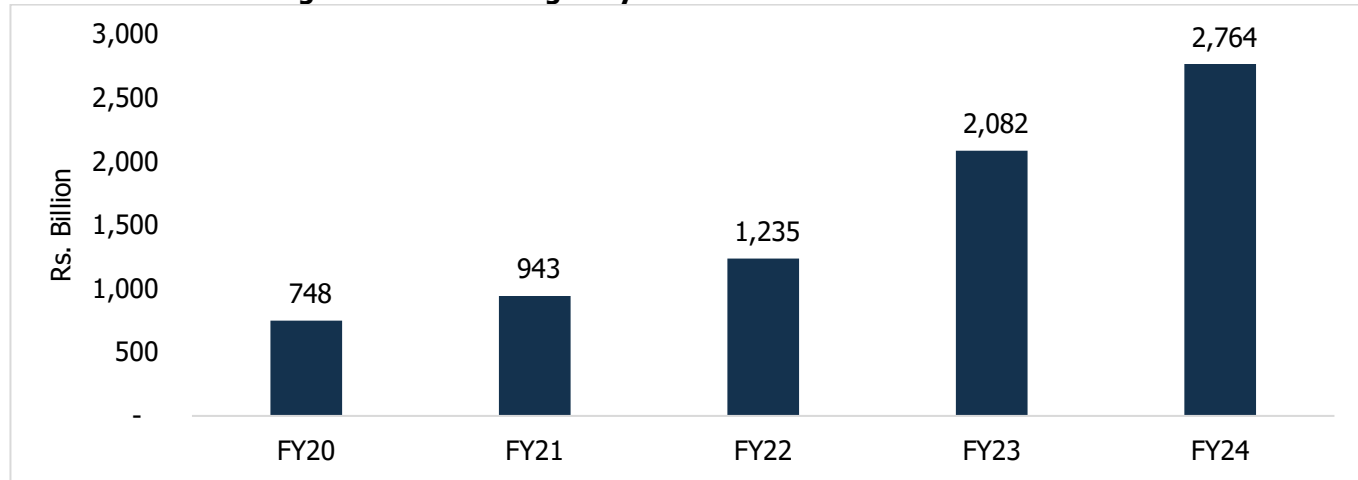


Source: Ministry of Roads Transport and Highways

While transportation, electricity, water, and irrigation remain key sectors, the government emphasizes the need to enhance delivery across all infrastructure domains to spur economic growth and improve living standards. Sectors like

energy, roads, urban development, and railways are expected to absorb approximately 70% of the projected capital expenditure during this period, with a collaborative approach involving all stakeholders driving infrastructure development and GDP growth.

Chart 24: MoRTH budget for National Highway



Source: PIB

2.7 Key risks and challenges

- Regulatory and Policy Risks:** These challenges are significant considerations in infrastructure investments, as they can have a substantial impact on the feasibility, profitability, and success of projects. Moreover, investors in infrastructure projects face uncertainties related to changes in laws, regulations, and government policies. The frequent changes in regulations, cumbersome approval process as well as lack of clarity in policies can hinder project execution. Thus, frequent changes in policies and regulatory uncertainties can deter investors and impact project viability. Hence, streamlining the regulations and ensuring consistency in policies are crucial for the sector's growth.
- Funding Challenges:** Access to affordable as well as long-term financing remains a significant challenge for EPC projects. Funding challenges in infrastructure investments are common and can arise from various factors. Infrastructure projects often require significant upfront capital investment. The high initial costs can be a deterrent for both public and private investors. Also, these projects typically have long gestation periods and payback periods. Investors may be reluctant to commit funds to projects that take many years to generate returns, especially when compared to short-term investments with quicker returns. Furthermore, some infrastructure projects, especially those involving public-private partnerships (PPPs), rely on user fees or government payments for revenue. The uncertainty associated with revenue generation, particularly if it depends on user demand, can make investors hesitant to commit funds.
- Entry barriers and impacts of new entrants :** Entering new geographical areas in the Indian toll industry presents significant barriers, including navigating complex regulatory requirements from bodies like NHAI and local authorities, managing high capital investments for infrastructure and technology, and overcoming existing long-term concessions and public-private partnerships. The arrival of new entrants can intensify competition by potentially lowering toll rates and disrupting the market with innovative technologies, thereby pushing existing operators to adapt and improve their traffic management and operational efficiency to handle increased congestion and maintain profitability.

- **Market Competition:** In the Indian toll industry, market competition poses several key risks and challenges, including revenue pressure from aggressive pricing strategies, market saturation, and the need for continual technology upgrades. Market competition poses major challenges for the Indian toll sector, including revenue pressure from competitors' aggressive pricing strategies that can lower profit margins. Market saturation in particular areas may reduce revenues by diluting traffic levels. Operational costs are further increased by the requirement to continually make investments in cutting-edge technologies, such as Electronic Toll Collection systems, in order to be efficient and competitive. These elements combined create a difficult environment for toll operators.
- **Other challenges:** Additionally, rising operational costs, complex regulatory compliance, and the impact of mergers and acquisitions can squeeze profit margins and alter market dynamics. Meeting evolving customer expectations and managing economic and traffic volatility are crucial to maintaining a competitive edge and ensuring financial stability.

3. Infrastructure and commercial real estate

3.1 Key Government Policies

Some of the key government infrastructure schemes include:

- The 2024-25 budget by the government highlights the impetus for growth by focusing on big public investment for modern infrastructure, which will be guided by PM Gati Shakti and benefit from the synergy of a multi-modal approach. It is a step toward economic growth as well as sustainable development and is driven by seven engines, namely, roads, railways, airports, ports, mass transport, waterways, and logistics infrastructure. 100 critical transport infrastructure projects have been identified at an investment of Rs 750 Billion including Rs 150 Billion from private players. For the urban infrastructure in Tier-II and Tier-III cities, a corpus of Rs 100 Billion has been set aside via the establishment of the Urban Infrastructure Development Fund.
- The government has also announced plans for the **National Monetization Pipeline (NMP) and Development Finance Institution (DFI)** to improve the financing of infrastructure projects.
- The government has helped the growth of urbanization through a number of schemes and projects, including the Smart Cities Mission, the Atal Mission for Rejuvenation and Urban Transformation (AMRUT), and the **Pradhan Mantri Awas Yojana (Urban)**.
- **Smart Cities Mission:** The Smart Cities Mission, launched on 25 June 2015, is aimed at providing core infrastructure, a clean and sustainable environment, and a decent quality of life to their citizens through the application of 'smart solutions'. It is a transformational mission aimed to bring about a paradigm shift in the practice of urban development in the country. Under this mission, 100 smart cities have taken up projects across diverse sectors related to mobility, energy, water, sanitation, solid waste management, vibrant public spaces, social infrastructure, smart governance, etc. As of September 2023, about 6,000+ projects worth more than Rs. 1.1 Trillion have been completed and the remaining projects will be completed by 30 June 2024.
- **AMRUT:** The Atal Mission for Rejuvenation and Urban Transformation (AMRUT) was launched on 25th June 2015 in selected 500 cities and towns across the country. The mission focuses on the development of basic infrastructure, in the selected cities and towns, in the sectors of water supply, sewerage and septage management, stormwater drainage, green spaces and parks, and non-motorized urban transport. A set of Urban Reforms and Capacity Building have been included in the mission.
This mission has been subsumed under AMRUT 2.0, which was launched on 01st October 2021 for a period of five years, i.e., from the financial year 2021-22 to the financial year 2025-26. It is designed to provide universal coverage of water supply through functional taps to all households in all the statutory towns in the country and coverage of sewerage/septage management in 500 cities covered in the first phase of the AMRUT scheme.
- **PMAY:** There is a significant thrust on providing housing for all under the Pradhan Mantri Awas Yojna (PMAY) by the government and the scheme has been getting steady allocation under the union budget. Further, the sustained efforts in sanctioning and completing a substantial number of houses under both PMAY-Urban and PMAY-Gramin schemes demonstrate the government's commitment toward promoting affordable housing and improving living conditions for individuals and families across the country.

The below table shows the budgetary allocation trend:

Table 17: Scheme-Wise Allocation Towards Infrastructure in FY25 (Rs Billion) Description

	FY22	FY23	FY24 [RE]	FY25 [BE]
Pradhan Mantri Awas Yojna (PMAY)	900	736	541	807
Urban Rejuvenation Mission: AMRUT and Smart Cities	139	152	132	104

Source: Union Budget 2024-25 Analysis, CareEdge Research

• **Bharatmala and Sagarmala** projects were introduced in 2017 by the Government of India.

Bharatmala is a flagship highway development program. The project is part of a larger initiative to enhance road infrastructure across the country. It aims to optimize the efficiency of freight and passenger movement by developing and expanding the national highway network. It focuses on improving connectivity, reducing travel time, and promoting economic growth. The project is expected to reduce logistics costs, improve transportation efficiency, and boost economic development by providing better connectivity between key economic areas. As on October 2023, about 26,350 km length of projects are awarded and 14,783 kms are constructed.

Whereas the **Sagarmala Programme** is a comprehensive initiative aimed at transforming India's maritime sector and harnessing the potential of its coastline. It was launched to promote port-led development and unlock the economic benefits of the maritime industry. Sagarmala focuses on modernizing existing ports, building new ports, and improving connectivity between ports and the hinterland. The project aims to enhance efficiency in cargo and passenger movement through coastal and inland water transport. This project further seeks to reduce logistics costs, create employment opportunities, attract investments, and stimulate economic development in coastal regions. Moreover, it aims to make maritime logistics more efficient and environmentally sustainable.

National High-Speed Rail Corporation Limited (NHSRCL) is a **government-owned** company in India responsible for the implementation of high-speed rail projects. The most prominent project undertaken by NHSRCL is the Mumbai-Ahmedabad High-Speed Rail (MAHSR) corridor, commonly known as the Bullet Train project. It was incorporated on February 12, 2016. The project involves collaboration with Japan as it utilizes the Shinkansen technology, known for its safety and efficiency, through a loan agreement with the Japan International Cooperation Agency (JICA). The high-speed rail corridor is expected to boost economic development along the route, create job opportunities, and improve connectivity between major cities.

3.2 Key Growth Drivers

In recent years, the government has taken several steps to accelerate infrastructure development, wherein, the key focus areas are transportation, energy, smart cities, water, social infrastructure, and digital infrastructure. There have also been efforts to attract foreign investors in the infrastructure sector through policy reforms. However, infrastructure projects are often expensive and have a long gestation period. To address this issue alongside fundraising and generating returns, the government is continuously striving to create a favourable operating environment for its players.

Accordingly, national and state-level agencies like the National Highways Authority of India (NHAI), state-level bodies, and private sector companies (both domestic and international), are actively participating in infrastructure development. With the growing population, the long-term need for robust infrastructure is necessary for economic development. This generates the need for massive investments in the development and modernization of infrastructure facilities which will cater to the growing demand and ensure competitiveness in the global market.

India's rapid urbanization fuels demand for new housing, commercial spaces, and improved urban infrastructure like metro networks, waste management systems, and power grids. Additionally, public and private investments in infrastructure are expected to rise significantly in the coming years. This will create opportunities for all segments.

- **Roads & Highways:** Growing freight movement, focus on national connectivity projects like Bharatmala Pariyojana, and increasing vehicle ownership will drive road and highway construction. Increasing urbanization drives the need for better transportation networks to accommodate growing populations. Road infrastructure development is closely linked to economic growth. Improved roads enhance access to markets, reduce transportation costs, and stimulate trade and commerce. Government funding and policies play a significant role in driving road infrastructure construction. Moreover, the collaboration between public and private sectors through PPPs can provide additional funding and expertise for road infrastructure projects, enabling their timely completion and maintenance. The Golden Quadrilateral connects four metropolitan cities of Delhi, Mumbai, Kolkata and Chennai, forming a quadrilateral. The Chandikhole-Bhadrak section of the Kolkata-Chennai Golden Quadrilateral corridor is being upgraded to a six-lane highway. This road spans West Bengal, Odisha, Andhra Pradesh, and Tamil Nadu, acting as the main arterial route connecting Odisha's coastal areas, according to the Union Minister of Road Transport and Highways.
- **Railways:** Railways offer an efficient means of mass transit, particularly in densely populated areas. As urban populations grow, there's increased pressure on transportation networks. Railways facilitate the movement of goods and people, contributing to economic growth. Expanded rail networks improve access to markets, reduce transportation costs, and stimulate trade. Public sector investments in railway infrastructure are crucial drivers. Integration with other modes of transportation such as ports, airports, and highways enhances the efficiency of freight and passenger transportation networks, driving investment in railway infrastructure. Therefore, rising passenger and cargo traffic, expansion of dedicated freight corridors, and modernization plans for the Indian Railways network will boost growth.
- **Power:** The increasing global energy demand, driven by population growth, urbanization, and industrialization, necessitates the expansion and modernization of power infrastructure. Growing concerns about climate change and environmental sustainability are accelerating the transition to renewable energy sources driving investments in renewable energy infrastructure. Supportive policies and regulations, including renewable energy targets, subsidies, tax incentives, and emission reduction commitments, play a significant role in driving investment in power infrastructure, particularly in renewable energy projects. Aging power grids and increasing frequency of extreme weather events necessitate investments in grid modernization, including upgrades to improve reliability, resilience, and cybersecurity, as well as the integration of distributed energy resources. Government initiatives and electrification programs aimed at providing access to electricity in rural and remote areas drive investments in off-grid and mini-grid power infrastructure projects. Demand for reliable power supply, increasing focus on renewable energy integration, and upgradation of transmission and distribution networks are key drivers.
- **Ports & Airports:** Ports and airports are vital gateways for international trade, facilitating the movement of goods and passengers. Growth in global trade and economic activity drives the need for expansion and modernization of port and airport infrastructure. The increasing trend towards containerization and intermodal transportation requires ports to enhance their capacity and efficiency to handle larger vessels and cargo volumes. Similarly, airports need to upgrade facilities to accommodate larger aircraft and passenger traffic. Investments in expansion projects, new terminals, and improved operational efficiency will help alleviate congestion and meet growing demand. The growth of emerging markets and the development of new trade routes, particularly in Asia-Pacific and Africa, create opportunities for investment in port infrastructure to support increased maritime trade volumes. Thereby, expanding international trade, rising air passenger traffic, and government initiatives to develop coastal infrastructure will propel the growth in these segments.

- **Water & Sanitation:** Rapid population growth and urbanization increase the demand for clean water and sanitation services, driving the need for infrastructure development in both urban and rural areas. Water scarcity and pollution, exacerbated by factors such as industrialization, agricultural runoff, and climate change, highlight the importance of investing in water treatment plants, wastewater management systems, and water conservation measures. Climate change impacts, such as droughts, floods, and sea-level rise, pose challenges to water availability and infrastructure resilience. Investments in climate-resilient infrastructure designs and adaptation measures are essential for ensuring long-term sustainability. International development goals, such as the Sustainable Development Goals (SDGs), set targets for universal access to clean water and sanitation services by 2030, driving global efforts and investments in infrastructure development. Hence, increasing water scarcity, growing urban populations, and government programs to improve water supply and sanitation systems will drive investments.
- **Digital Infrastructure:** Digital infrastructure has revolutionized toll collection in India by introducing efficient and transparent systems that streamline operations and enhance user experience. Advanced technologies such as RFID (Radio Frequency Identification) tags, GPS (Global Positioning System), and automated toll collection systems like FASTag have significantly improved the efficiency of toll collection processes across the country. These digital systems eliminate the need for physical cash transactions, reducing congestion at toll plazas and ensuring seamless passage for vehicles. Moreover, they enable real-time monitoring of traffic flow and revenue collection, allowing authorities to analyze data for better infrastructure planning and management. The integration of digital payment platforms has also enhanced accountability and transparency in toll collection operations, minimizing revenue leakages and ensuring that funds are allocated effectively for road maintenance and development. Overall, digital infrastructure in toll collection has not only expedited travel times but also contributed to the overall modernization and efficiency of India's road infrastructure management.
- Increasing Foreign Direct Investment (FDI) inflow in sectors like construction and infrastructure fuels growth in the EPC industry. Foreign investors see India as a lucrative market due to its vast infrastructure requirements and government support for foreign investments.
- In addition to these growth drivers, there is a growing focus on using sustainable practices and materials in construction projects, creating opportunities for green building technologies. Whereas advancements in prefabricated construction, Building Information Modelling (BIM), and drone technology are expected to improve efficiency and productivity.
- Furthermore, continuous efforts by the government to make the business environment convenient to operate and streamline the regulatory process will support the growth of investments in the infrastructure segment.

Factors contributing to rising infrastructure construction projects:

- **Government Push:** The Indian government is heavily invested in infrastructure development. Initiatives like the National Infrastructure Pipeline (NIP) with an outlay of ₹111 trillion (US\$1.5 trillion) and ambitious plans for "Smart Cities" create a guaranteed pipeline of projects for construction companies.
- **Project Diversity:** These infrastructure projects span various segments like roads, railways, power, airports, ports, and urban infrastructure. This growth is not limited to one area, creating a broad spectrum of opportunities.
- **Increased Funding:** The government's focus translates to increased funding, not just from public sources but also attracting private investments through Public-Private Partnerships (PPP) models. This injects more money into the construction sector, fueling its growth.

- **Increased Demand for Resources:** With more projects, the demand for raw materials, skilled labour, and construction equipment rises. This stimulates various sectors that supply these resources, further boosting the overall economy.
- **Job Creation:** More projects lead to a need for more workers across various skill sets, creating jobs for engineers, construction workers, architects, and other professionals.
- **Technological Advancements:** The need to deliver large projects efficiently drives innovation in construction methods. **Technologies** like prefabrication, Building Information Modelling (BIM), and drone technology are being adopted to improve efficiency and safety.
- **Urban Development:** As infrastructure improves, it unlocks the potential for better urban development. Improved transportation networks, reliable power supply, and efficient waste management systems create a more attractive environment for businesses and residents, further fueling construction activity.

3.3 Key risks and challenges

- **Regulatory and Policy Risks:** These challenges are significant considerations in infrastructure investments, as they can have a substantial impact on the feasibility, profitability, and success of projects. Moreover, investors in infrastructure projects face uncertainties related to changes in laws, regulations, and government policies. The frequent changes in regulations, cumbersome approval process as well as lack of clarity in policies can hinder project execution. Thus, frequent changes in policies and regulatory uncertainties can deter investors and impact project viability. Hence, streamlining the regulations and ensuring consistency in policies are crucial for the sector's growth.
- **Funding Challenges:** Access to affordable as well as long-term financing remains a significant challenge for EPC projects. Funding challenges in infrastructure investments are common and can arise from various factors. Infrastructure projects often require significant upfront capital investment. The high initial costs can be a deterrent for both public and private investors. Also, these projects typically have long gestation periods and payback periods. Investors may be reluctant to commit funds to projects that take many years to generate returns, especially when compared to short-term investments with quicker returns. Furthermore, some infrastructure projects, especially those involving public-private partnerships (PPPs), rely on user fees or government payments for revenue. The uncertainty associated with revenue generation, particularly if it depends on user demand, can make investors hesitant to commit funds.
- **Land Acquisition and Environmental Clearances** are two critical challenges that often pose obstacles to infrastructure development. Securing land for infrastructure projects is a complex and time-consuming process and due to increasing environmental concerns, obtaining environmental clearances is a major hurdle in the country. These issues can significantly impact project timelines, costs, and overall feasibility.
- **Quality Control and Skill Gap:** Ensuring top-notch construction standards poses a challenge within the industry. Moreover, a scarcity of proficient labour and engineers creates a deficiency in technical know-how. To tackle these challenges, it's imperative to invest in skill enhancement and enforce rigorous quality control measures.
- **Budget Constraints:** Infrastructure maintenance is a critical aspect of sustainable and effective infrastructure development. However, it often poses challenges when it comes to raising investment for new/existing projects. Governments and private entities may face budget constraints, leading to deferred maintenance of existing

infrastructure. This backlog can create a negative perception among investors, as they may be concerned about the long-term viability and reliability of the infrastructure.

- **Technology Adoption:** While technological advancements bring numerous benefits to infrastructural development, they also pose challenges that need to be addressed. Adopting new technologies often requires significant upfront investments in research, development, and implementation. The initial costs can be a barrier for some infrastructure projects, especially for cash-strapped governments or smaller organizations. Hence, rapid technological advancements may render certain infrastructures obsolete, necessitating ongoing updates and investments. Hence, adopting contemporary construction technologies and embracing digitalization is essential for enhancing project efficiency and reducing costs.

3.4 Key players in the infrastructure market

NCC: NCC has broadened its footprint in various sectors of construction and infrastructure development nationwide. Their construction endeavors encompass a wide range of projects including buildings, transportation, water and environmental initiatives, electrical transmission and distribution, irrigation, mining, and railway projects. Some ongoing projects include, design, supply, install & commission Advance Metering Infrastructure (AMI) in Maharashtra worth Rs. 5,756 Cr and construction of One of the Largest Waste water treatment plants in Malad, Mumbai of Rs. 3,833 Cr.

Dilip Buildcon Ltd: Dilip Buildcon Limited (DBL) is one of India's largest and fastest growing engineering, procurement and construction (EPC) companies. Based in Bhopal and have construction capabilities in roads and special bridges, mining, irrigation, tunnels, airports and metros in 19 states and 1 union territory. Their core business comprises constructing state and national highways. DBL is currently working on the alignment of the Thoppur Ghat, Dharmapuri-Salem section of NH-44 road in Tamil Nadu is being improved by the National Highways Authority of India in Q4 FY24 with a budget of Rs. 5,480. In Madhya Pradesh, the Water Resource Department is constructing the Machhrewa Irrigation Project Dam and pressurized pipe irrigation network in Q4 FY24 with a budget of Rs. 4,129.

Hindustan Construction Co Ltd.: Hindustan Construction Company Limited ('HCC' or the 'Company') is engaged in the engineering and construction of large infrastructure projects. The Company's core competencies in the areas of design, engineering and execution are focused on complex projects of national importance in the areas of transportation, power, marine, water and industrial. Mumbai's Coastal Road Project is on track for completion next fiscal year, with bridge and interchange works proceeding as scheduled. The sea link connector design has been updated for a longer navigation span of 120m. DMRC DC-06 has finished constructing a 1.4 km twin tunnel using Shield TBM for the DN Line of the 'Janakpuri West (Delhi) - RK Ashram Corridor', with the Krishna Park Extn. underground station and other civil works nearing completion.

GR Infraprojects Ltd: G R Infraprojects Limited, established in 1995, is a leading civil construction company with expertise in road, railway, metro, airport, and energy sectors. With over three decades of industry experience and a robust project portfolio spanning across 16 states, we specialize in EPC, BOT, and HAM projects, delivering timely and quality infrastructure solutions through our integrated project execution model and in-house resources. Some ongoing projects include; Construction of the Access Controlled Pune Ring Road in Maharashtra spans from Kalyan/Rathwade to Shivare/Kusgaon Phase, covering 9.341 km, on EPC mode. Additionally, the Nagpur-Chandrapur Access Controlled Super Communication Expressway in Maharashtra, stretching from Seldoh to Lonhar, covers 33.300 km under EPC mode.

KNR Constructions: The company specializes in providing engineering, procurement, and construction (EPC) services, primarily focusing on the roads and highways, irrigation and urban water infrastructure management. Its order book is dominated by road projects (69%), followed by irrigation. The company is an established player in the entire south India As of 9MFY24, it had revenue of Rs 3000 crore and an order book to sales ratio as of December 2023 was 1.2x.

PNC Infratech: PNC Infratech Limited is a listed public limited Indian infrastructure investment, development, construction, operation, and management company. The company specializes in areas such as expressways, highways, bridges, flyovers, airport runways, water supply, industrial area development, and other related activities. It has expertise in EPC projects in roads and highways. As of 9MFY24, it had revenue of Rs 6100 crore and an order book to sales ratio as of Dec'23 was 2.1x.

Ashok Buildcon: Ashoka Buildcon Limited established in 1993. The company is primarily involved in the construction of roads, highways, bridges, and other infrastructure projects. It operates across various states in India and has executed projects for both government and private clients. It develops and builds infrastructure facilities on design, build, finance, operate and transfer (DBFOT) basis in the highways sector, and on EPC basis in the highways and power sectors. As of 9MFY24, it had revenue of Rs 6700 crore and an order book to sales ratio as of December 2023 was 1.5x.

Adani Enterprises: Adani Enterprises entered the business of road and highways construction in January 2018 and has bagged a portfolio of more than 5,000 km lane spread over 10 states. Adani Enterprises has a balanced portfolio of 14 projects comprising a mix of eight HAM projects, five BOT projects and one TOT project.

3.5 Redensification in India

Redensification in India involves adopting innovative strategies to increase urban density and promote sustainable development, particularly in rapidly growing cities like Mumbai and Pune. These strategies, such as corridor densification through FSI-linked land use control and infrastructure financing mechanisms, aim to encourage compact urban development along public transport corridors. An example is the BRT (Bus Rapid Transit) system implemented by the PCMC (Pimpri-Chinchwad Municipal Corporation), which finances the scheme through the UTF (Urban Trust Funds), capturing incremental benefits from increased land values. These approaches represent a departure from previous methods and offer a holistic model for sustainable urban development with potential for replication in other cities and countries facing similar challenges.

The Government of Madhya Pradesh has issued directives to streamline re-densification projects. District Collectors or Heads of Departments compile lists of suitable properties for such projects, which can be proposed by various authorities or agencies. Once earmarked, schemes undergo approval by the District Planning Committee or the Empowered Committee if needed. Executing agencies such as the MP Housing Board or Municipalities are preferred, with surplus land auctioned if no interest is shown. Notably, re-densification projects in Indore include repurposing Central Jail land for residential and commercial use, and developing commercial complexes at various sites. These projects aim to optimize land usage and urban development, with allocated funds for maintenance and streamlined valuation and registration processes. The guidelines also address compensation, government guarantees, and regulatory amendments for effective project implementation.

Overall, redensification in India is a complex and multifaceted process that requires careful consideration of socio-economic factors, infrastructure needs, and urban governance mechanisms to achieve balanced and equitable urban growth.

3.6 Impact of redensification in India

Redensification, as advocated by the Ministry of Urban Development (MOUD), prioritizes human mobility over vehicular movement. Through intensified development along transit corridors and the elevation of Floor Space Index (FSI) to promote higher-density living, cities like Mumbai and Pune can alleviate traffic congestion, enhance transport efficiency, and mitigate greenhouse gas emissions.

Moreover, corridor densification offers avenues for economic prosperity and urban rejuvenation. By fostering dynamic, mixed-use communities along transit routes, cities can attract investments, bolster local businesses, and elevate the overall livability for residents.

In addition, redensification endeavors can yield positive outcomes for urban ecosystems and biodiversity. Many Indian cities boast rich biodiversity, nurtured by citizens from diverse socio-economic backgrounds. Community-driven initiatives like rainwater harvesting, lake restoration, and waste management contribute to shrinking urban ecological footprints and bolstering environmental sustainability.

To achieve a harmonious balance between economic progress and environmental conservation, informed decision-making and sustainable planning are imperative. Collaborative endeavors involving governmental bodies, civil society organizations, and local communities are pivotal for implementing and upscaling successful initiatives nationwide.

Ultimately, the impact of redensification transcends immediate urban concerns, offering a trajectory towards a secure, fair, and sustainable future. By embracing innovative solutions and inclusive urban development strategies, India can navigate the multifaceted challenges of urbanization while enhancing the well-being of its populace.

3.7 Importance of redensification

- **Optimizing Land Use Efficiency:** Residential redevelopment plays a pivotal role in maximizing land use efficiency, particularly in cities where land availability is limited. By repurposing existing buildings or revitalizing underutilized areas, developers can unlock the full potential of available land. This approach fosters increased density and helps curb urban sprawl, ultimately leading to more sustainable and efficient urban environments.
- **Driving Economic Growth and Job Creation:** Redevelopment projects serve as catalysts for economic growth, stimulating various sectors and creating employment opportunities. During the construction phase, redevelopment projects generate jobs across multiple industries, including architecture, engineering, construction, and skilled trades. Furthermore, the completion of redevelopment initiatives often leads to the emergence of new businesses and establishments, further bolstering job creation and economic activity, especially in upcoming projects in Mumbai.
- **Boosting Property Values:** Redevelopment efforts contribute significantly to the appreciation of property values in surrounding areas. By enhancing the aesthetics, functionality, and amenities of neighborhoods, developers create more desirable living and commercial spaces. This heightened desirability often translates into increased property values, benefiting property owners and the local tax base. Additionally, the revitalization of areas can attract additional private investment and development, further driving up property values.
- **Promoting Sustainable Practices:** Redevelopment projects offer an opportunity to integrate sustainable and green design principles into urban environments. Old structures can be retrofitted with energy-efficient systems, utilize renewable energy sources, and incorporate water-saving measures. By prioritizing sustainability, redevelopment initiatives contribute to reducing the environmental footprint of cities, improving energy efficiency, and combating climate change.
- **Fostering Community Engagement and Social Well-being:** Well-planned redevelopment projects prioritize community engagement, ensuring that the needs and aspirations of residents are considered. By creating new public spaces, recreational areas, and community facilities, developers cultivate a sense of belonging, social interaction, and improved quality of life for residents. Investments in new residential projects in areas like Santacruz (Mumbai) further enhance community living experiences.

- **Addressing Urban Decay and Crime:** Redevelopment efforts play a crucial role in mitigating urban decay and crime by eliminating vacant and abandoned buildings. By replacing these blighted structures with vibrant, well-maintained spaces, redevelopment contributes to the overall safety and security of neighborhoods. This revitalization makes communities more appealing to residents, businesses, and visitors alike.

4. Roads and bridges infrastructure market in India

4.1 Total length and breakup of roads

India has the second-largest road network in the world, with about 63,31,791 km as of FY23. This comprises national highways, expressways, state highways, major district roads, other district roads, and village roads. To accelerate the country's growth, the development of national highways has been the key focus area. On the other hand, state highways, district and rural roads continue to be a large part of the overall road network.

Table 18: Road Network of Past 5 Years (In Km)

Particulars	FY20	FY21	FY22	FY23	FY24
National Highways	1,32,500	1,32,500	1,40,995	1,44,955	1,46,145
State Highways	1,56,694	1,76,818	1,71,039	1,67,079	1,79,535
Other Roads	56,08,477	59,02,539	60,59,813	60,19,757	63,45,403
Total	58,97,671	58,97,671	62,15,797	63,71,847	66,71,083

Source: Ministry of Road Transport and Highways of India Annual Reports, CareEdge Research

Road transportation, the most common mode of transportation in India, accounts for about 87% of passenger traffic. Despite having a network of 1,44,955 km, Indian national highways account for only 2% of total road network and 40% of total road traffic. State highways and major district roads make up the country's secondary road transportation system, accounting for 60% of traffic and 98% of road length.

Table 19: Percentage Share in Total Road Length Across Various Categories

Year	National Highways	State Highways	District Roads	Rural Roads	Urban Roads	Project Roads
2019	2.1%	2.8%	9.7%	71.4%	8.6%	5.4%

Source: Ministry of Road Transport and Highways of India Annual Reports, CareEdge Research

4.2 Policy framework at the central level

Road construction is amongst the critical sub-segments for infrastructure development, economic growth, and employment creation. Besides, the government is primarily focusing on infrastructure. For instance, in the Union budget 2024-25, the government budgeted to incur higher expenditure toward road construction. Wherein, the central government made the highest ever outlay of Rs 2,78,000 crore (compared to the estimated expenditure of Rs 2,76,300 crore for 2023-24).

Moreover, Rs 1,11,00,000 crore of investments have been projected in infrastructure projects for FY20-FY25 by the Task Force on National Infrastructure Pipeline (NIP), with ~18% of the targeted investment expected to be made in the road sector in India. Also, under the recently announced Asset Monetization Pipeline, around Rs 1,60,000 crore are to be raised through the monetisation of roads.

MoRTH, an apex ministry under the central government, is entrusted with the task of formulating and administering policies for road transport, national highways and transport research, in consultation with other central ministries/departments, state governments/UT administrations, organizations and individuals, with a view to increasing the mobility and efficiency of the road transport system in the country.

National Highways Authority of India (NHAI), is responsible for the development and maintenance of national highways. The **National Academy of Highway Engineers** (formerly National Institute of Training for Highway Engineers) is responsible for sharing of knowledge and pooling of experience on the entire range of subjects dealing

with the construction and maintenance of roads, bridges, tunnels, and road transportation including technology, equipment, research, planning, finance, taxation, organization, and all connected policy issues. A wholly owned company of MoRTH, **National Highways and Infrastructure Development Corporation (NHIDCL)**, is responsible for promoting, surveying, establishing, designing, building, operating, maintaining, and upgradation of national highways and strategic roads including interconnecting roads in parts of the country which share international boundaries with neighboring countries.

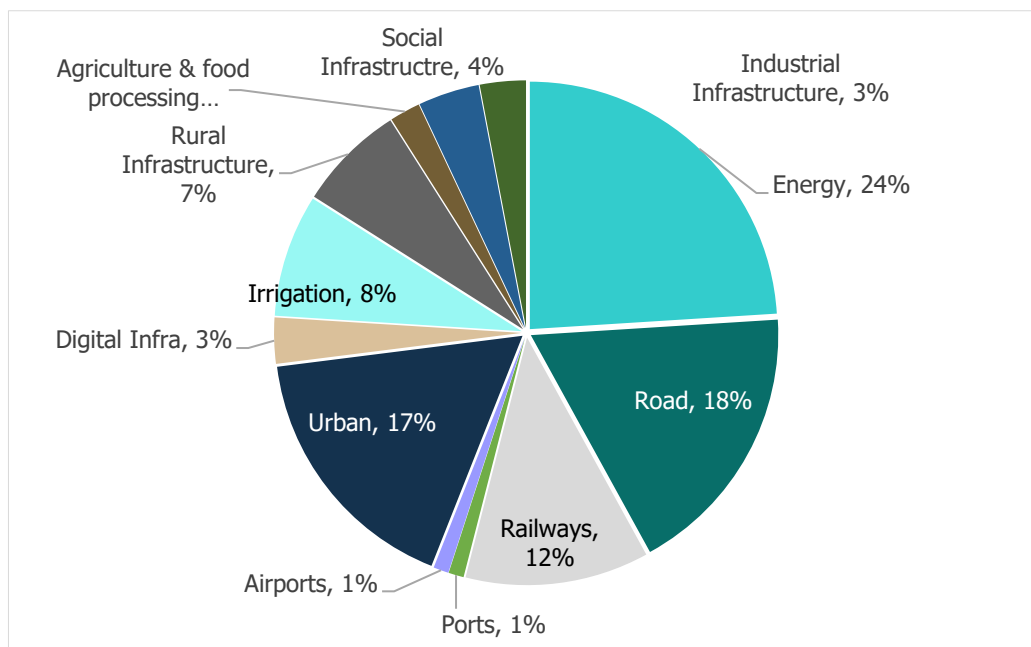
4.3 Review and breakup of Investments in Key Infrastructure Sector

Infrastructure development is the need of the hour. The government has launched the National Infrastructure Pipeline (NIP) combined with other initiatives such as 'Make in India' and the production-linked incentives (PLI) scheme to augment the growth of the infrastructure sector. Historically, more than 80% of the country's infrastructure spending has gone towards funding for transportation, electricity, water, and irrigation. The Centre's share in National Infrastructure Policy (NIP) is 39% whereas the state and private sectors contribute 39% and 22%, respectively.

Keeping this growth objective in view, the National Infrastructure Pipeline (NIP) was launched with a projected infrastructure investment of around Rs 1,11,00,000 crore (USD 1.5 trillion) for FY 2020-2025 to provide world-class infrastructure across the country and improve the quality of life for all citizens. It also envisages improving project preparation and attracting domestic and foreign investment in infrastructure. NIP was launched with 6,835 projects, which has expanded to over 9,000 projects covering 34 infrastructure sub-sectors.

While these sectors remain the key focus, the government also prioritizes other sectors as India's business environment and demographics are evolving. There is a need for enhanced and improved delivery across the whole infrastructure range, from housing to water and sanitation services to digital and transportation demands. This will further ensure economic growth, increase quality of life, and boost sectoral competitiveness.

Chart 25: Sector-Wise Break-Up of Capital Expenditure of Rs. 1,11,00,000 crore during Fiscal FY20-FY25



Source: NITI Aayog's report on National Infrastructure Pipeline, CareEdge Research

During FY20-25, sector wise breakup of NIP investment is with energy contributing the highest at Rs. 26,90,000 crore around 24% of the total plan followed by roads Rs. 20,33,800 crore at 18%, urban Rs. 19,19,300 crore at 17%, and

railways with an investment of Rs. 13,67,600 crore which contributes 12% amount to ~71% of the projected infrastructure investments in India.

Table 20: National Infrastructure Pipeline Sectoral Split (Rs. Crore)

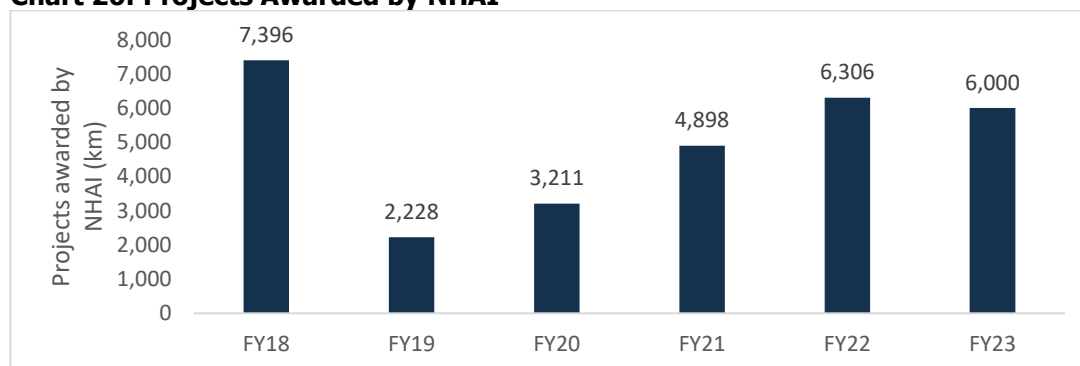
	FY20	FY21	FY22	FY23	FY24	FY25	No Phasing	Total
Power	164,100	225,600	221,700	223,500	225,200	211,000	139,300	1,410,400
Renewable Energy	30,500	151,000	144,000	170,000	217,000	217,000	-	929,500
Atomic Energy	11,600	21,500	28,300	33,100	32,700	28,300	-	155,500
Petroleum and Natural Gas	27,300	43,500	48,300	41,500	22,900	10,500	500	194,600
Total Energy	233,600	335,400	442,400	468,100	497,800	466,800	139,800	2,690,000
Roads	332,600	383,300	357,000	252,800	240,800	332,700	134,800	2,033,800
Railways	133,400	262,500	308,800	273,800	221,200	167,900	-	1,367,600
Ports	13,400	18,100	20,600	15,900	7,700	10,000	35,500	121,200
Airport	18,700	21,700	24,800	21,300	25,400	5,100	26,400	143,400
Urban	298,200	462,200	404,100	234,900	217,200	159,900	142,900	1,919,300
Irrigation	114,500	200,600	175,700	137,400	115,300	70,500	80,600	894,500
Rural Infrastructure	140,300	176,800	210,800	111,900	107,100	27,100	-	773,900
Digital Infrastructure	78,400	61,800	54,500	38,700	38,100	38,100	-	309,600

Source: NITI Aayog's report on National Infrastructure Pipeline

4.4 Road project funding, awarding and construction in India

The length of projects awarded by the National Highways Authority of India (NHAI) has increased over time, going from just 2,228 km in FY19 to 3,211 km in FY22. Even amidst the disruptions caused by the COVID-19 pandemic, FY21 saw a remarkable upswing, with the NHAI awarding 4,898 km of highway projects. The length of projects awarded went up from 4,898 in FY21 to 6,306 in FY22.

Chart 26: Projects Awarded by NHAI



Source: NHAI Annual Reports, CareEdge Research

The NHAI awarded 6,306 km in FY22, demonstrating the increasing trend of awarding, while in FY23 it reached at around 6,000 km and the awarding is expected to slow down and reach approx. 5,000 km per year upto FY27. Since the cost of essential input materials, such as steel, bitumen, and cement, have been volatile, developers have been delaying the purchase of these supplies, which has prevented construction from moving forward much this year.

Strong execution of projects was witnessed in FY22, albeit lower than in FY21 as it was impacted by the reinforcement of lockdowns and extended monsoons. In FY23, construction activity picked up but was still lower than in FY21 on

account of lower awarding activity than in FY22. However, project execution is expected to continue its momentum in FY24 on the back of various government initiatives such as Gati Shakti, Bharatmala Pariyojana, National Infrastructure Pipeline and change in the Model Concession Agreement (MCA) of the Hybrid Annual Model (HAM) of road project implementation.

4.5 Demand drivers, emerging trends and challenges of road sector

4.5.1 Key demand drivers

- **Population Growth and Economic Development:** India's growing population and economic development necessitate improved transport infrastructure. Investments in roads, railways, aviation, shipping, and inland waterways are crucial for facilitating economic growth and development.
- **Recent Initiatives:** In March 2024, Prime Minister Narendra Modi inaugurated multiple connectivity projects in Kolkata, totaling Rs. 1,50,390 crore. The Minister of Civil Aviation and Steel announced inaugurating 15 airport projects worth Rs. 1,01,336 crore by 2028. In June 2022, the Minister of Road Transport and Highways opened 15 national highway projects worth Rs. 1,42,035 crore in Bihar.
- **National Infrastructure Pipeline (NIP):** Projects worth Rs. 10,86,15,000 crore are currently at different stages of implementation under the NIP. The government's increased capital investment outlay underscores its commitment to infrastructure development.
- **Infrastructure Development in Roads and Highways:** India's roads and highways sector is projected to exhibit a CAGR of 36.16% during 2016-2025. The Bharatmala Pariyojana aims to upgrade and expand the road network, including the construction of expressways and economic corridors.
- **Public-Private Partnerships (PPPs) and Investment Opportunities:** Models like the Hybrid Annuity Model (HAM) and toll-operate-transfer (ToT) have stimulated private sector participation in infrastructure projects. India allows 100% FDI in roads and highways under the automatic route, presenting lucrative investment opportunities.
- **Innovation and Efficiency:** The adoption of digital platforms and artificial intelligence in project management demonstrates a commitment to efficiency and transparency. India's infrastructure landscape offers immense growth potential, with notable achievements in road construction and innovative infrastructure projects.

4.5.2 Emerging Trends

- **Technology integration** in road infrastructure for traffic control, real-time monitoring, and intelligent mobility solutions is known as "smart infrastructure."
- **Sustainable Practices:** Using renewable energy sources, green building methods, and environmentally friendly materials in road constructions.
- **Multimodal connection:** For seamless connection, there is a focus on combining road networks with other forms of transportation like railroads, waterways, and air travel.
- **Public-Private Partnerships (PPPs):** Using PPP models to generate finances and skills, the private sector is becoming more involved in road development projects.
- **Electric Vehicles:** As more people use electric more improvements and innovations in the road infrastructure are required to accommodate these cutting-edge technologies.

4.5.3 Challenges faced by the Road Sector

Despite the government's continuous support by way of financing and amendments in the PPP model framework, few challenges still persist for the sector.

- **Delay in land acquisition and receipt of approvals for road construction:** Post Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation and Resettlement Act, 2003, many land owners demand higher compensation and refuse to hand over possession of their land. With the Act coming into effect, the cost of land has increased thereby increasing higher cash outflow from the government towards land acquisition. Furthermore, delay in land acquisition and receipt of approvals for road construction leads to substantial project cost and time overruns, thereby impacting the project viability.
- **Mismatches between Project Cashflows and Debt Repayment Tenure:** Revenue from large infrastructure projects is spread over 20-30 years whereas the loan for the same project is for 10-15 years. This results in cash flow mismatches in the initial years of operations till the project stabilizes, thereby resulting in private players funding cashflow mismatches from their own sources.
- **Limited private sector participation in BOT projects due to past financial stress; however good participation seen in HAM projects awarded in past few years:** Due to failed BOT projects on account of lower than-estimated traffic volumes or delays in project completion due to approvals/ land acquisition, private players have come under financial stress due to significantly leveraged balance sheets in anticipation of high levels of project revenue growth. However, road authority has been awarding projects under HAM wherein the risks are limited and lower funding is required because 40% of the project cost is provided by the NHAI in 10 installments based on the milestone achieved. Also in the remaining 60% of the project cost, the developer needs to finance only 20-25% and the rest can be raised on debt. Hence, decreased financial stress.
- **Cautious bank lending approach to road sector, due to highly Stressed Loan Portfolio in the past:** With higher debt exposure to road project and many projects getting stuck or delayed resulted in loans turning into non-performing assets (NPAs), which had contracted the lending capacity of banks. With lower than anticipated revenues, the private players' debt servicing capacity has been impacted. To mitigate the risk of failure of the company, restructuring of loans has been opted by the private players. Restructuring of loans for the first time does not impact asset classification but subsequent restructuring leads to NPA recognition in the books of financial institutions. Hence, banks have become cautious in terms of lending to road sector.
- **Toll collection and willingness of users to pay toll:** The sector is susceptible to end users willingness to pay toll, as there have been instances of people skipping toll payments, backed by regional groups or political parties. This in turn impacts the toll collection efficiency and revenues from the road projects, thereby adversely impacting the project cashflow position.

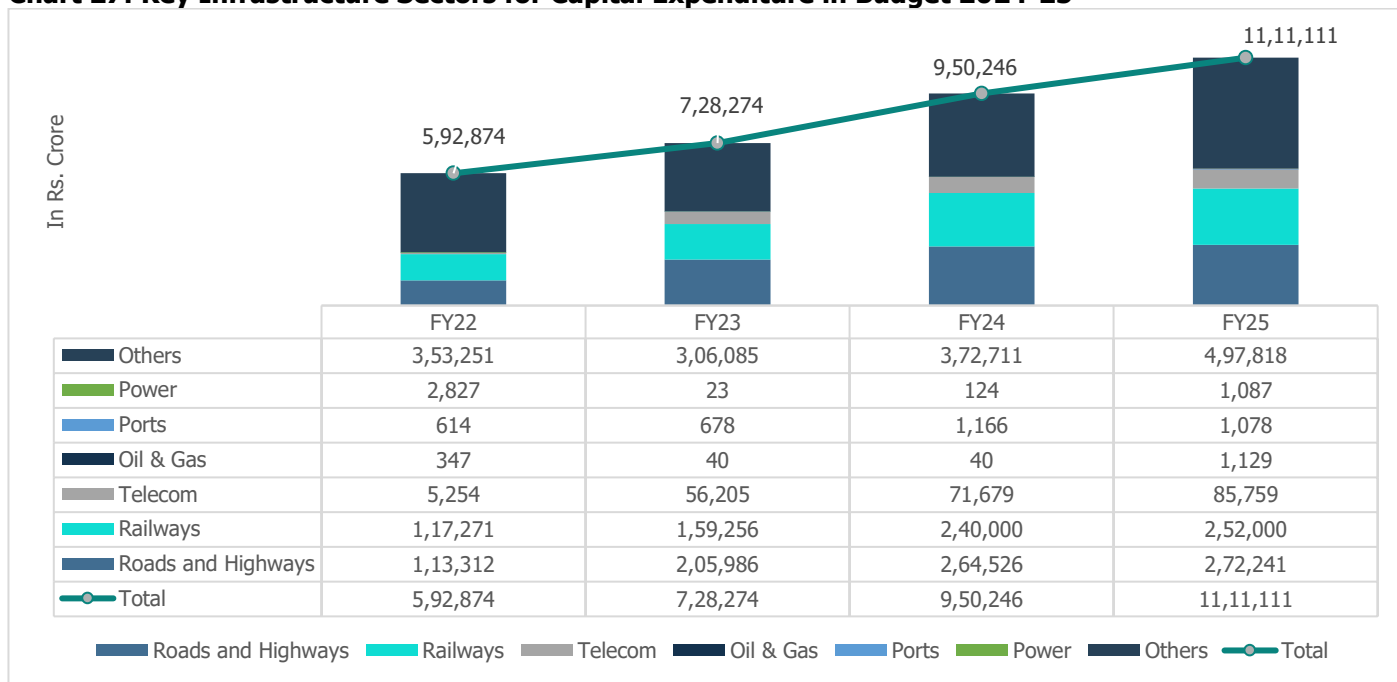
4.6 Budgetary outlay

Budgetary Outlay Toward Infrastructure and Governmental Infra-Projects

One of the key drivers for economic growth is the increased infrastructure investment thrust by the government. In the Union Budget 2024-25, the government continued its focus on infrastructure development with budget estimates of capital expenditure toward the infrastructure sector of Rs. 11,11,111 crore. Furthermore, continuous efforts by the

Government of India to make the business environment convenient to operate and streamline the regulatory process will support the growth of investments in the infrastructure segment.

Chart 27: Key Infrastructure Sectors for Capital Expenditure in Budget 2024-25



Source: Union Budget 2024-25 Analysis, CareEdge Research

Road construction is amongst the critical sub-segments for infrastructure development, economic growth, and employment creation. Besides, the government is primarily focusing on infrastructure. For instance, in the Union budget 2024-25, the government budgeted to incur higher expenditure toward road construction.

Overall, the Union Budget for 2024-25 emphasized infrastructure development. The budget plan aims for multi-modal logistics facilities and connectivity systems under the PM Gati Shakti. For infra push, financial assistance of Rs 1,30,000 crore in interest-free loans for 50 years has been allocated to states from the Centre. This augurs well for the roads sector alongside the government’s plans to generate employment opportunities.

The 2024-25 budget by the Government highlights the impetus for growth by focusing on big public investments for modern infrastructure, which shall be guided by PM Gati Shakti and benefited from the synergy of a multi-modal approach.

- The Ministry of Road and Highways gross budgetary outlay has doubled from Rs. 128,000 crore in FY19 to 2,64,000 crore in FY24. In FY25, the capex witnessed a modest 3% y-o-y growth with an allocation of Rs. 2,72,000 crore which is expected to normalise the order book of road EPC companies for the coming year.
- The assets monetization target has increased to Rs. 15,000 crore in FY25 from Rs. 10,000 crore in FY24.
- The budgetary outlay of Rs 1,68,000 crore towards the NHAI for FY25 has remained flattish as compared to FY24.
- The NHAI aims to increase project awards by modifying the build-operate-transfer (BOT) model with fast-tracked clearance, as its share has decreased in recent years.

The budget 2024-25 allocated Rs. 2,52,000 crore to Indian Railways which is up by 5.8% over budgetary estimate levels of Rs. 2,40,000 crore for FY23-24. The capital outlay of Rs. 2,43,000 crore has been provided for the Railways based on 2023-24 revised budget estimates, which is the highest ever outlay and about nine times the outlay made in 2013-14. The government has announced the implementation of three major economic railway corridor programs which is

aimed at enhancing logistics efficiency as well as reducing costs. In addition to this, the conversion of 40,000 normal rail bogies to Vande Bharat standards is set to enhance passenger safety, convenience and comfort.

Urban Infrastructure Development Fund (UIDF) will be established through use of priority Sector Lending shortfall, which will be managed by the national Housing Bank, and will be used by public agencies to create urban infrastructure in Tier 2 and Tier 3 cities.

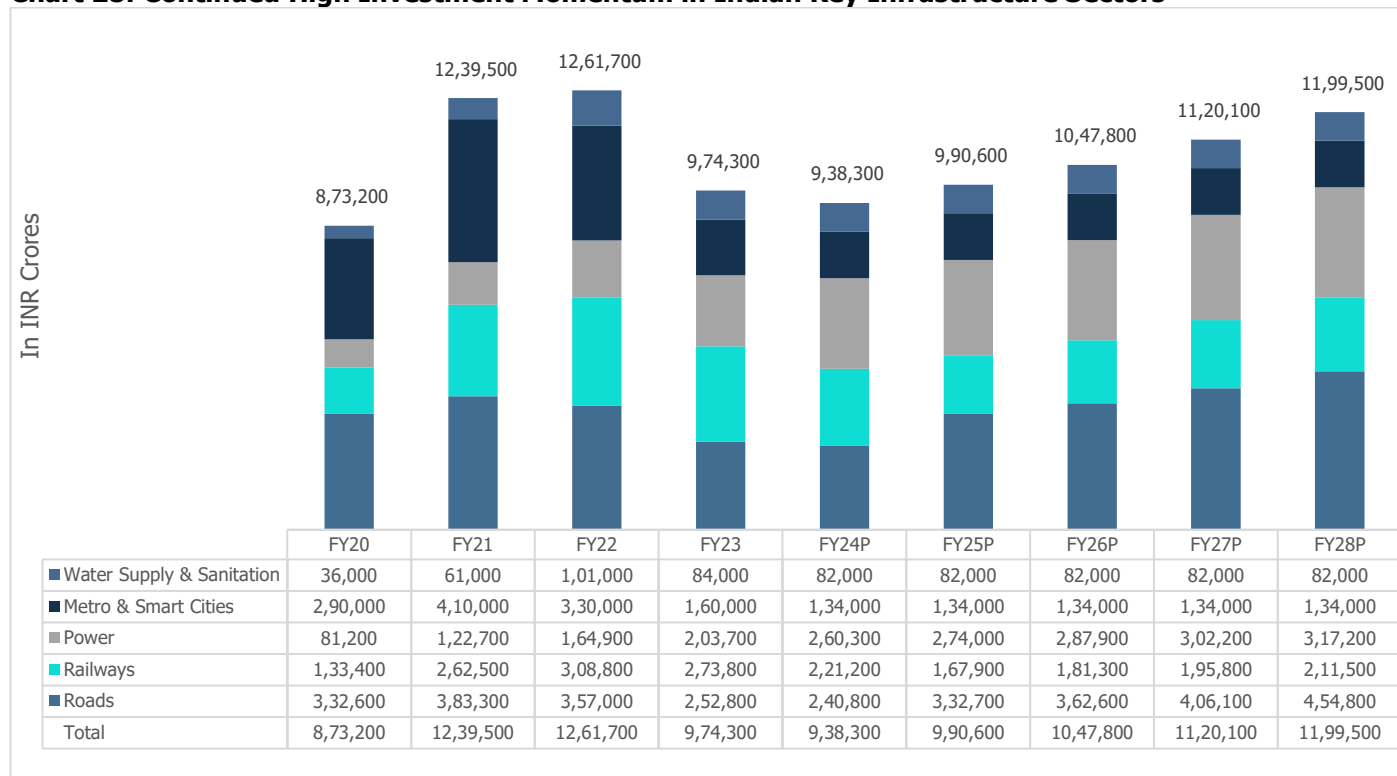
The emphasis has been laid on the expansion of existing airports and comprehensive development of new airports under UDAN scheme.

India’s economic growth is fueled by a diverse range of sectors, of which infrastructure is a vital sector. The Indian infrastructure contributes around 3% to the GDP as of FY23. In recent years, the government has taken several steps to accelerate infrastructure development, wherein, the key focus areas are transportation, energy, smart cities, water, social infrastructure, and digital infrastructure. There have also been efforts to attract foreign investors in the infrastructure sector through policy reforms.

Further, infrastructure projects are often expensive and have a long gestation period. To address this issue, fundraising and generating returns, the government is continuously striving to create a favorable operating environment for its players. Accordingly, national and state-level agencies like the National Highways Authority of India (NHAI), state-level bodies, and private sector companies (both domestic and international), are actively participating in infrastructure development.

With the growing population, the long-term need for robust infrastructure is necessary for economic development. This generates the need for massive investments in the development and modernization of infrastructure facilities, which will not only cater to the growing demand but will also ensure competitiveness in the global market.

Chart 28: Continued High Investment Momentum in Indian Key Infrastructure Sectors



Source: CareEdge Research, NITI Aayog, NIP

Note: The projections are based on our estimations for multiple sectors which have been derived from respective government department sources.

4.7 Overview of upcoming projects (EPC)

Project Name	State	Cost (Rs. Crore)
Versova-Virar- Palghar Sea Link Project	Maharashtra	63,426
Hindu Hruday Samrat Balasaheb Thackeray Maharashtra Samruddhi Mahamarg	Maharashtra	55,335
Expressway (Pune-Bengaluru) Project	Karnataka, Maharashtra	49,241
Pune-Bengaluru Greenfield Expressway (Bammanala-Muttagadahalli) Project	Karnataka	38,724
Economic Corridor (Pillaiyarpatti-Tuticorin) Project [Package-II]	Tamil Nadu	30,502
Expressway (Raxaul to Haldia Port) Project	Bihar , West Bengal	30,233
Peripheral Ring Road Project	Karnataka	27,000
Jalna-Nanded Expressway Project	Maharashtra	22,000
Greenfield Highway(Thiruvananthapuram-Kottarakara-Kottayam-Angamaly) Project	Kerala	19,428
Greenfield Highway (Surat-Nashik-Ahmednagar) Project	Gujarat , Maharashtra	17,950
Corridor (Lakhnadaon-Raipur) Project	Madhya Pradesh , Chhattisgarh	17,832
Mandi-Dabwali-Panipat Expressway Project [Package-II]	Haryana	14,302
Chambal Expressway (Kota-Etawah) Project [Atal Progressway]	Rajasthan, Uttar Pradesh	12,170
Corridor (Lalsot-Kishangarh-Jodhpur-Interchange) Project	Dausa, Rajasthan	10,700
Agra-Gwalior Highway (Deori-Susera) Project	Rajasthan, Uttar Pradesh, Madhya Pradesh	4,068
Inter Corridors (Paniyala-Alwar-Barodameo) Project	Rajasthan	3,547

Source: Projects Today

4.8 Major infrastructure development plans

The need for infrastructure development is evident, with the government spearheading efforts through initiatives like the National Infrastructure Pipeline (NIP), bolstered by programs such as 'Make in India' and the production-linked incentives (PLI) scheme. Historically, a significant portion of infrastructure spending, over 80%, has been directed towards transportation, electricity, water, and irrigation, with the Centre, states, and private sectors contributing 39%, 39%, and 22% respectively to the National Infrastructure Policy (NIP).

Aligned with growth objectives, the NIP was launched with a substantial projected investment of Rs 1,11,00,000 crore (USD 1.5 trillion) for FY 2020-2025, aimed at delivering top-tier infrastructure nationwide and enhancing citizens' quality of life. The initiative also targets improvements in project readiness and attracting both domestic and foreign investment. Initially comprising 6,835 projects, the NIP has since expanded to over 9,000 projects across 34 infrastructure sub-sectors.

While these sectors retain primary focus, the government acknowledges the evolving business landscape and demographics, emphasizing the need for enhanced delivery across all infrastructure domains, from housing to digital and transportation services, to ensure economic growth, elevate living standards, and enhance sectoral competitiveness.

In fiscal years 2020-2025, key sectors like energy, roads, urban development, and railways are slated to absorb approximately 70% of the projected capital expenditure in India's infrastructure. The NIP adopts a collaborative approach involving all stakeholders to drive infrastructure development and stimulate short-term and potential GDP growth.

India presents significant opportunities for road construction companies. These initiatives aim to enhance connectivity, improve transportation efficiency, and boost economic growth by constructing new highways and upgrading existing road networks. There is a growing demand for smart and green infrastructure in the roads and highways sector. Significant impetus has been given by the government on improving road infrastructure in union budget 2024-25. Roads and Highways accounts for the highest share, followed by Railways and Urban Public Transport.

Roads and Highways: This sector emerges as one of the key sectors for potential investment, with a considerable array of projects currently in the planning phase. The Bharatmala Pariyojana is advancing its Phase I, which aims to develop 34,800 kilometers of National Highways. It prioritizes corridor-based development and is slated for completion by 2027-2028, spanning 31 States/Union Territories and encompassing over 550 districts. Moreover, the government aims to construct 22 new greenfield expressways, marking substantial progress in India's transportation infrastructure.

Railways: As the fourth-largest railway network globally, Indian railways envision capturing a substantial 40% global rail activity share by 2050. Many existing railway networks require modernization and upgradation to meet safety, efficiency, and capacity requirements. Projects involving track renewal, signalling system upgrades, electrification, and station modernization present opportunities for construction companies. Moreover, as railways expand into mountainous terrain or densely populated urban areas, there is a need for tunnel construction expertise. Opportunities exist for construction companies specializing in railway tunnelling projects. The visionary National Rail Plan (NRP) 2030 aims to enhance capacity to meet anticipated future demand, aiming for a 45% modal share in freight traffic by 2050 according to India Investment Grid. As part of the NRP initiative, Vision 2024 expedites essential projects like electrification, multi-tracking, and speed enhancements along key routes.

India's railway sector is embarking on ambitious ventures such as the Mumbai-Ahmedabad Speed Rail Corridor, which includes the construction of the world's highest pier bridge, as well as the Chenab bridge in Jammu & Kashmir, hailed as the world's highest railway bridge. With a total Broad Gauge network spanning 61,508 kilometres electrified as per Industry Report on Indian Construction Sector December 2023, the sector has also introduced 35 domestically designed Vande Bharat Express trains, with an additional six slated for launch in the near future. These trains cater to up to 247 districts across the country. Indian Railways is committed to achieving Net Zero Carbon Emission status by 2030, having commissioned 211 MW of solar plants and 103 MW of wind power plants as of October 2023, in addition to securing agreements for 2,150 MW of renewable energy capacity.

Real Estate: There is a growing demand for affordable housing in many regions, driven by population growth, urbanization, and government initiatives. Construction companies can capitalize on opportunities to develop affordable housing projects that cater to the needs of middle and lower-income segments of the population. Mixed-use developments that combine residential, commercial, retail, and recreational spaces are gaining popularity. Construction firms can participate in the construction of mixed-use projects that offer integrated living, working, and leisure environments.

The adoption of smart building technologies, including Internet of Things (IoT) devices, sensors, and automation systems, is transforming the real estate sector. Construction firms can capitalize on opportunities to integrate smart technologies into building construction projects, enhancing efficiency, comfort, and security. The demand for commercial and office spaces remains robust, particularly in major business hubs and emerging business districts. Construction companies can participate in the development of office buildings, co-working spaces, and mixed-use commercial

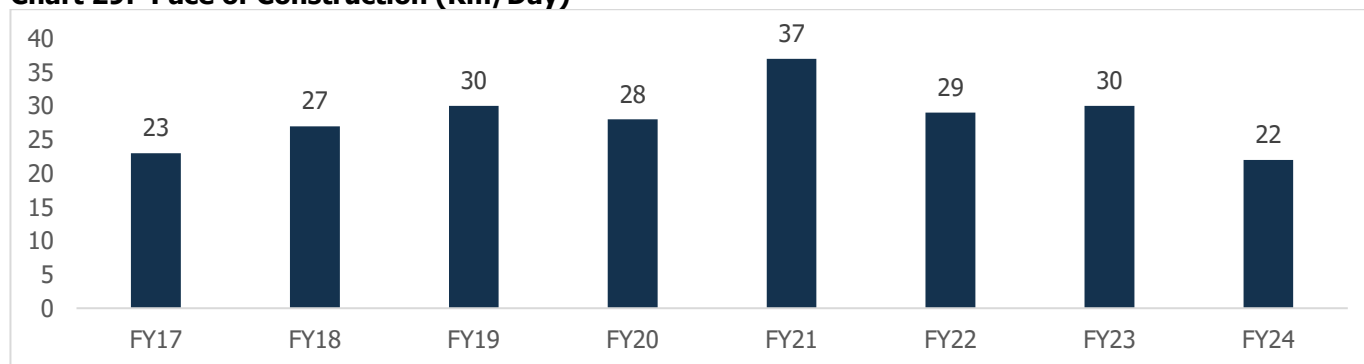
projects. Construction firms can capitalize on opportunities to build industrial parks, distribution centers, and logistics hubs to support the growing needs of industrial and warehousing facilities.

Ports: According to the World Bank's Logistics Performance Index (LPI) Report 2023, India's ports have achieved a "Turn Around Time" of 0.9 days, surpassing that of the USA (1.5 days), Australia (1.7 days), and Singapore (1.0 day). Sagarmala, the flagship Central Sector Scheme of the Ministry of Ports, Shipping, and Waterways, aims to drive port-led development in India by leveraging the country's extensive coastline spanning 7,500 km, as well as 14,500 km of potentially navigable waterways and strategic positioning on major international maritime trade routes. The Union Ministry for Ports, Shipping, and Waterways has stated that the nation's total port capacity will surge from the current 2,600 MTPA (Million Tonnes per annum) to over 10,000 MTPA by 2047. From April to November 2023, cargo totaling 86.47 MMT was transported via waterways, marking a 7.49% increase compared to the same period in 2022, which saw 80.44 MMT of cargo. Additionally, the government aims to operationalize 23 waterways by 2030.

Airports: The Ministry of Civil Aviation's flagship Regional Connectivity Scheme UDAN (Ude Desh Ka Aam Nagarik) is geared towards enhancing air connectivity to regional airports in small towns. Introduced in 2016, UDAN aims to democratize access to flight services for the general populace by bolstering infrastructure and air connectivity. In its initial five years, UDAN facilitated travel for over one crore passengers, inaugurating 425 new routes and 58 airports. The budget for 2023–24 earmarked INR 1,244.07 Cr for UDAN, doubling the allocation from the previous year, with plans to rejuvenate 22 airports. Furthermore, the government unveiled plans to revive an additional 50 airports, heliports, water aerodromes, and advanced landing grounds.

4.9 Outlook on investments on National Highways

Chart 29: Pace of Construction (Km/Day)

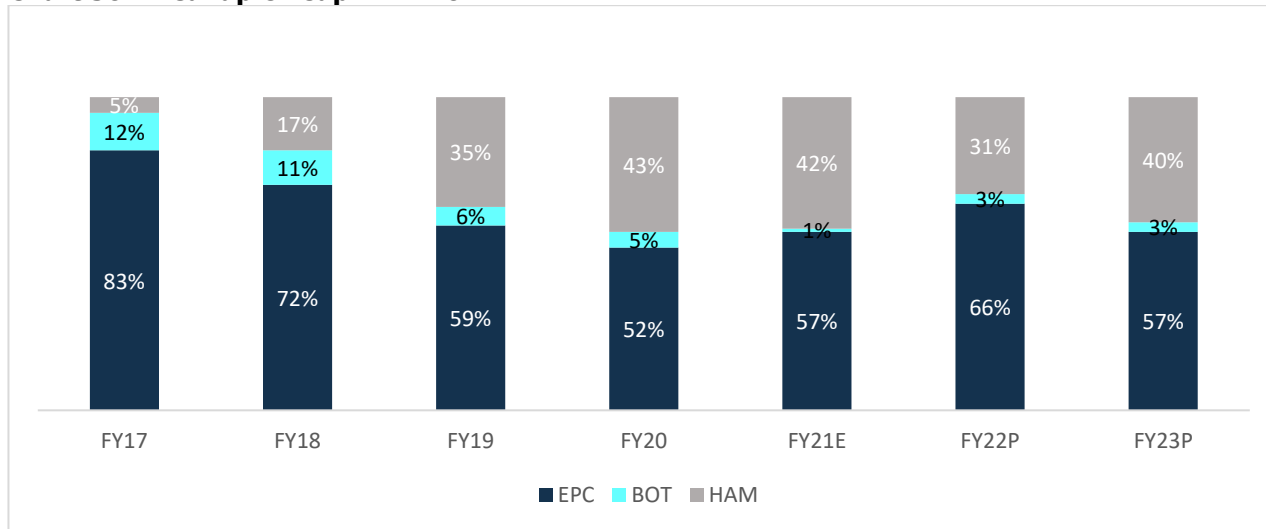


Source: Ministry of Road Transport and Highways of India Annual Reports & CareEdge Research

Note: * refers to period April to November 2023

According to Ministry of Road Transport & Highways, out of the total length approved, an aggregate length of 14,317 km have been approved on EPC mode, an aggregate length of 10,898 km on HAM mode and an aggregate length of 408 km on BOT mode as on 31st December 2022.

Chart 30: Breakup Of CapEx Mix of NHAH



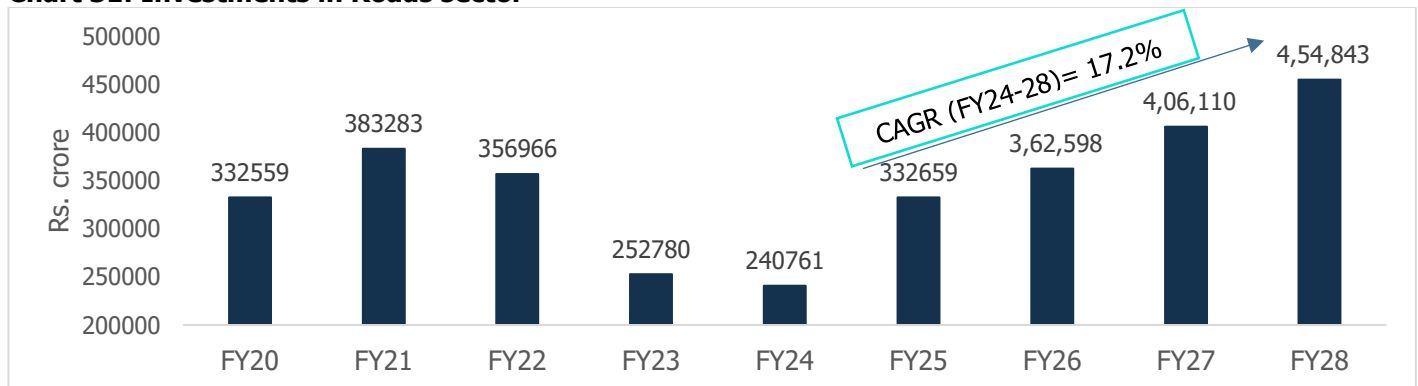
Source: NHAH Annual Reports, CareEdge Research

• **Hybrid Annuity Model (HAM) facilitates Private Participation in Highway Construction**

The national highway projects have witnessed a decline in awarding activity due to lower participation from private players. However, with an increased focus on Engineering, Procurement and Construction (EPC) and Hybrid Annuity Model (HAM) models, the pace of awards of NH projects till FY23 grew at a strong pace of 11.41% CAGR over the past 4 years (Refer to the chart below).

The investments in roads sector is expected to grow by a CAGR of around 10-12% during the period FY25-FY28. CareEdge research anticipates Rs. 18,00,000 crore of investments from FY24-28 which will be invested in national highways with expected CAGR of around 17% in the same period.

Chart 31: Investments in Roads sector



Source: Niti Aayog report on National Infrastructure Pipeline, CareEdge Research

4.10 Key Developments in Railways and Roadways sector

The Government of India is undertaking a comprehensive overhaul of the country's infrastructure to stimulate economic growth, enhance connectivity, and improve citizens' quality of life. This effort includes modernizing transportation networks, upgrading urban amenities, and expanding digital infrastructure. Key initiatives span the development of highways, railways, airports, waterways, and ropeway systems, all aimed at fostering inclusive and sustainable

development nationwide. Notable achievements include the world's longest highway tunnel, the Atal Tunnel, and the world's highest railway bridge, the Chenab Bridge.

Road Infrastructure Development

India's road infrastructure is undergoing significant transformation through strategic planning and substantial investments. Since 2014, the budget allocation for road transport and highways has increased by 500%, leading to enhanced infrastructure development. The pace of highway construction reached a record 37 km/day in 2020-21, the fastest in India's history. The National Highway (NH) network expanded by 60% from 91,287 km in 2014 to 1,46,145 km in 2023. The length of 4-lane NHs increased 2.5 times from 18,387 km in 2014 to 46,179 km by November 2023. The average construction pace rose by 143%, from 12.1 km/day in 2014 to 28.3 km/day.

Under the Pradhan Mantri Gram Sadak Yojana (PMGSY), 3.74 lakh km of rural roads have been constructed since 2014, connecting over 99% of rural habitations. This brings the total completed rural roads to 7.55 lakh km as on March 2024, compared to 3.81 lakh km in 2013-14, underscoring the government's commitment to improving rural accessibility and connectivity.

Indore is part of the Smart City initiative, which includes retrofitting, redevelopment, and pan-city development to enhance infrastructure and services. Indore is enhancing its road infrastructure with several key projects. The 64 km Indore Western Bypass, awarded to MKC Infrastructure in March 2024, and the 76 km Indore Eastern Bypass, with bids invited in December 2023, will form a 140 km ring road around the city, expected to be completed by 2026. Major national highways like NH 3 (Agra-Bombay), NH 59 (Indore-Ahmedabad), and NH 59A (Indore-Betul-Nagpur) pass through Indore, improving connectivity. Recent projects include the four-laning of NH 47 from Indore to Harda and NH 347 BG between Indore and Burhanpur, enhancing links to Nagpur and Hyderabad, with a completion target of December 2024. These developments aim to ease traffic congestion and support the city's growth.

India's railway development reflects significant strides towards modernization and enhanced connectivity, demonstrating the Government's commitment to improving the nation's transportation infrastructure.

Key Developments in Indian Railways

Vande Bharat Trains

- **Advancements:** These trains feature enhanced safety, faster acceleration, and improved passenger amenities such as automatic plug doors, ergonomic seats, and mobile charging sockets at every seat.
- **Operational Status:** Over 100 Vande Bharat train services are operational as of January 31, 2024, with a high overall occupancy rate of 96.62% during 2022-23.

Amrit Bharat Station Scheme

- **Objective:** Continuous development and modernization of railway stations with a long-term approach.
- **Progress:** 1,318 stations have been selected for redevelopment under this scheme.

Electrification

- **Vision:** Achieve 100% electrification of Broad-Gauge tracks for an eco-friendly, faster, and energy-efficient transportation mode.
- **Current Status:** 61,508 Route Kms of Broad-Gauge tracks electrified by December 2023, covering 93.83% of the total Broad-Gauge network (65,556 RKM). In 2014, only 21,801 KM were electrified.

Metro Rail Expansion

- **Growth:** The Metro Rail network has expanded from 248 km in 2014 to 905 km by 2024.

- **Impact:** Serves approximately 1 crore passengers daily, with the network growing from 5 cities in 2014 to 20 cities currently. Additionally, 959 km of lines are under construction in 27 more cities.
- **Innovation:** Introduction of the State of Art Namo Bharat train on the Delhi-Meerut RRTS (Regional Rapid Transit System) corridor, enhancing regional connectivity and modernizing urban commuting.

4.10.1 Interdependency of the railways and roadways

Roadways and railways share a fundamental interdependency that is vital for modern transportation systems globally. This interrelationship encompasses multiple dimensions that illustrate their integration and mutual reliance. Firstly, physically, they often share common infrastructure elements such as bridges and tunnels in urban areas, essential for seamless connectivity and operational efficiency between different modes of transport. These physical links facilitate smooth transitions for passengers and freight, ensuring a cohesive transport network.

Logically, roadways and railways are tightly coupled in transport logistics. Railways excel in long-distance transport of bulk goods and passengers, while roadways offer flexibility for local distribution and access to areas not directly served by rail lines. This logical coupling ensures that both modes complement each other effectively, contributing to the overall resilience and efficiency of the transport system. Additionally, their response behavior to disruptions varies from adaptive to inflexible, necessitating coordinated strategies to manage and mitigate impacts effectively. Environmental factors, including social, economic, and regulatory influences, further shape the operations and goals of road and rail infrastructure, guiding decisions aimed at improving safety, sustainability, and economic viability across both transport modes.

The interaction between rail and road transport dynamics significantly influences toll revenues and operational strategies for toll operators. Enhanced rail infrastructure and reduced freight costs can enhance the attractiveness of rail transport, potentially diverting freight traffic away from roads and impacting toll revenues. Conversely, if rail costs rise or infrastructure proves inadequate, rail efficiency may suffer, leading to increased road freight and potentially boosting toll revenues as road usage rises.

Both the rail and road transport sectors face competitive pricing pressures, prompting toll operators to adopt dynamic pricing strategies and improve services to remain competitive. Investment in advanced technologies and superior customer service becomes crucial for toll operators seeking to differentiate themselves and maintain user loyalty amidst evolving transport preferences.

Managing regulatory complexities and rising operational costs is equally critical for toll operators to sustain profitability. Continuous monitoring of rail transport trends and fluctuations in freight costs allows toll operators to adjust their strategies proactively, capitalize on emerging opportunities, and optimize revenue potential.

5 Commercial and Residential Real Estate Market in India

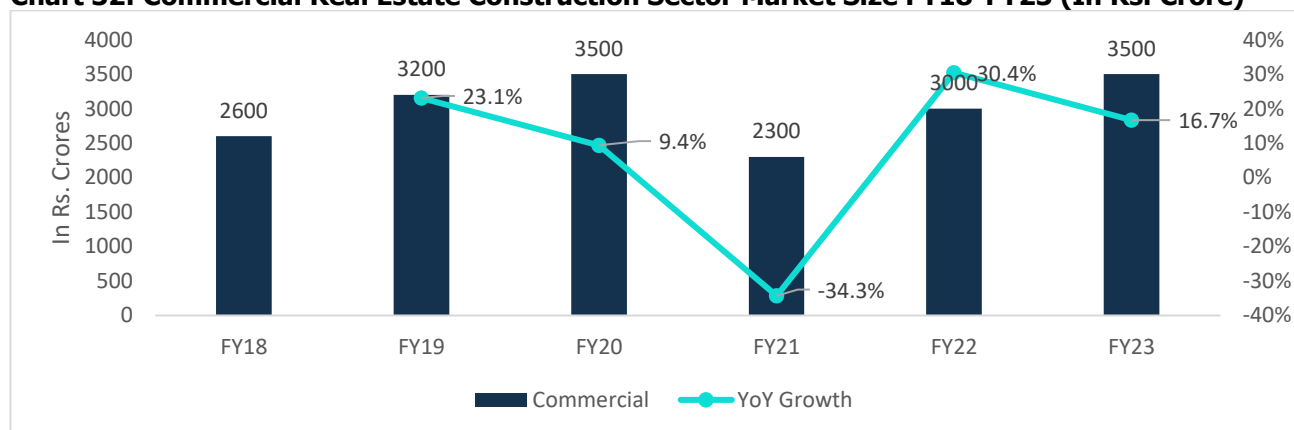
5.1 Indian Commercial Real Estate Infrastructure Market

The Indian real estate industry witnessed a slowdown in the years before the pandemic due to the general slowdown in the economy. However, this had little impact on the demand for office space. The demand for office space grew by leaps and bounds for the better part of the past decade with the unavailability of good quality supply being the only impediment to higher growth. We estimate the demand for office space, particularly in metros, to have outstripped supply before 2020.

The Commercial Real Estate Construction sector which contribute just 0.9% to total construction industry as of FY23, the industry has witnessed a CAGR growth of 6.4% from Rs. 2600 crore in FY18 to Rs. 3500 crore in FY23. The industry is expected to grow by CAGR of 6.6% from FY23 to FY28.

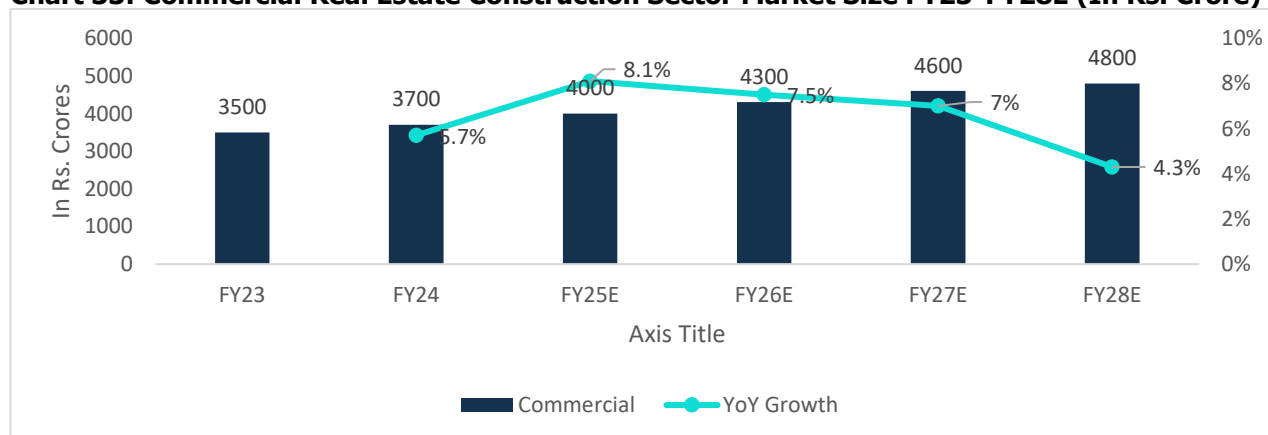
The growing need of commercial real estate will lead to growth in need of commercial offices to meet the growing demand. The industry will grow from Rs. 3500 crore in FY23 to Rs. 4800 crore in FY28. The commercial real estate will contribute 0.9% in FY28 of the total construction sector of India.

Chart 32: Commercial Real Estate Construction Sector Market Size FY18-FY23 (In Rs. Crore)



Source: CMIE, CareEdge Research

Chart 33: Commercial Real Estate Construction Sector Market Size FY23-FY28E (In Rs. Crore)



Source: CMIE, CareEdge.

E: Estimate

Further, the growth in the office segment was aided by investors who showed great interest in the commercial space. A comparison of investments in commercial with residential shows that returns from commercial are higher than the residential space. An increasing number of private equity funds showed interest in the commercial office space in 2018, followed by the same in 2019.

In addition, with residential real estate becoming end-user-driven, commercial real estate emerged as a more attractive investment proposition for individual investors and institutional funds. Accordingly, developers are also responding to the demand. Incidentally, a better performance of the office segment will eventually trickle to greater demand for the residential segment. As a result, the commercial space is crucial in terms of both, its impact and its linkages.

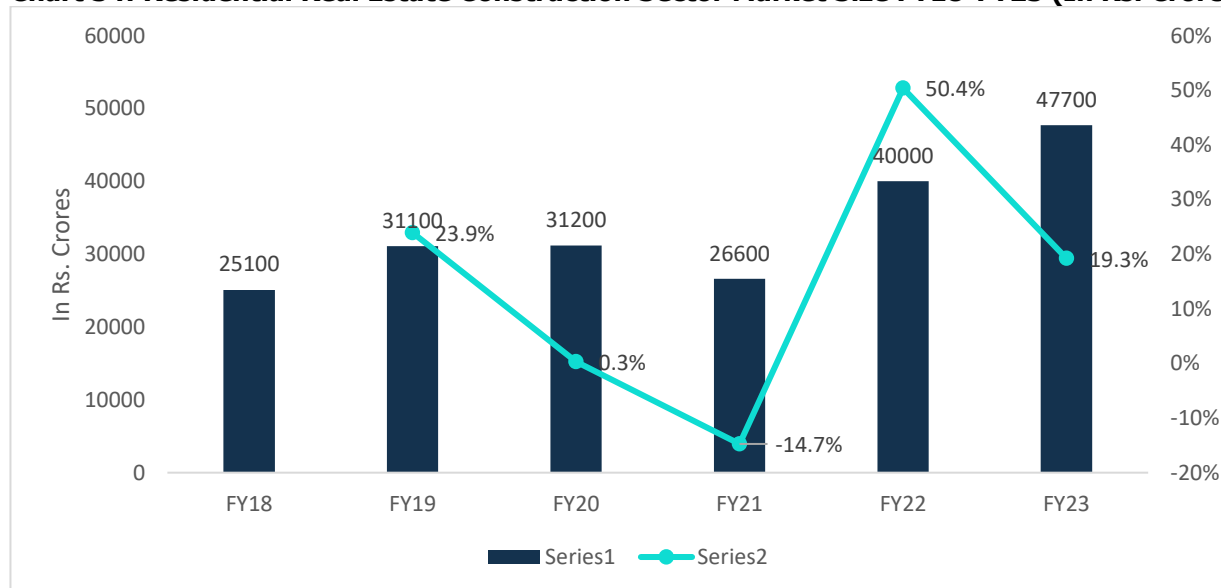
Furthermore, in India, commercial property gives an average rental yield of 8%-11%, while the rental yield from residential property is 1.5%-3%. This segment, which includes industrial, retail, and warehousing, is projected to do well on account of a rapid growth of the warehousing segment and a gradual pick up in the office segment.

5.2 Indian Residential real estate infrastructure market

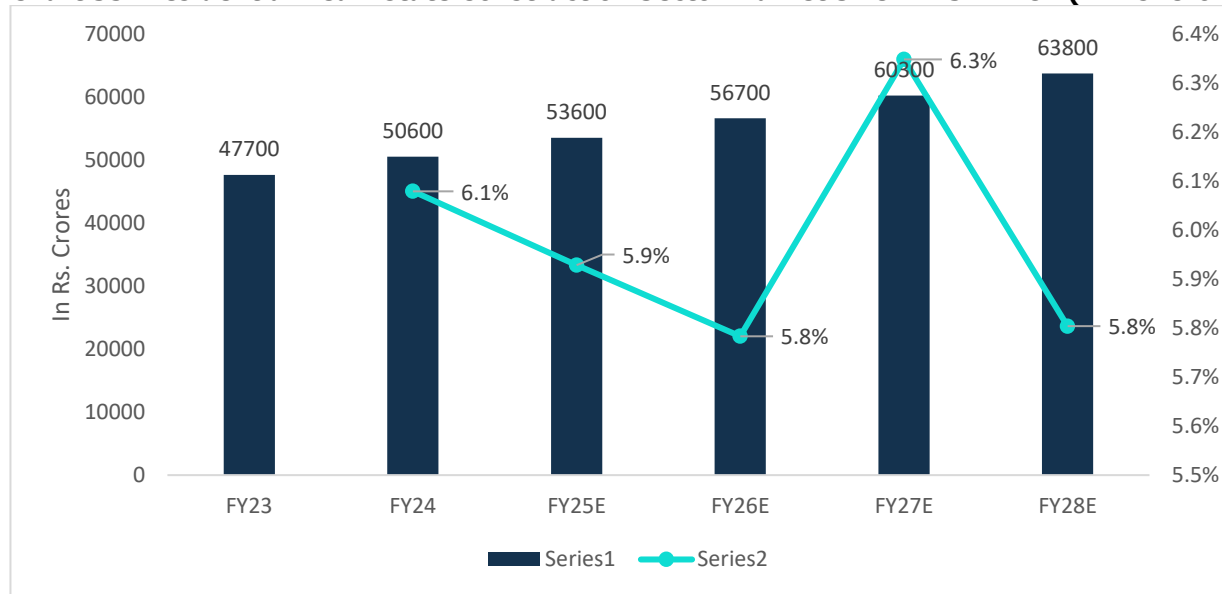
The Residential Real Estate Construction sector which contribute 12.2% to total construction industry as of FY23, the industry has witnessed a CAGR growth of 13.7% from Rs. 25,100 crore in FY18 to Rs. 47,700 crore in FY23. The industry is expected to grow by CAGR of 6.0% from FY23 to FY28. The industry is expected to grow below average in Residential segment in comparison with overall industry growth of 7.5% due to increase in cost of borrowings and subdued demand in the same time period.

With growing urban population and government initiatives on housing will lead to stellar growth in need of residential homes to meet the growing population demand. The industry will grow from Rs. 47700 Billion in FY23 to Rs. 638 Billion in FY28. The residential real estate will contribute 11.4% in FY28 of the total construction sector of India.

Chart 34: Residential Real Estate Construction Sector Market Size FY18-FY23 (In Rs. Crore)



Source: CMIE, CareEdge Research

Chart 35: Residential Real Estate Construction Sector Market Size FY23-FY28E (In Rs. Crore)

Source: CMIE, CareEdge.

E: Estimate

In India, the real estate industry is the second-largest employment generator after agriculture. Around three houses are built per 1,000 people annually against the required construction rate of five houses per 1,000 individuals annually, as per industry estimates. This indicates that there is significant untapped potential for growth in the sector.

While the current shortage in housing in urban areas is pegged at around 100 lakh units, the shortage in affordable housing space is expected to be higher considering the urban population. Additionally, healthy economic growth and the uptick in India's service sector have created additional demand for office space, which, in turn, is likely to result in greater demand for housing units in nearby vicinity.

Furthermore, India is among the top 10 price-appreciating housing markets worldwide. Therefore, it is expected that this sector will incur more non-resident Indian (NRI) investment, both in the short term and the long term. Whereas the growing flow of funds through the FDI route in Indian real estate is encouraging increased transparency. Moreover, developers, in order to attract funding, have revamped their accounting and management systems to meet due diligence standards.

5.3 Key players in the market

- Sunteck Realty Limited:** Sunteck Realty Limited is involved in the development of upscale residential and commercial properties in Mumbai and other major Indian cities. The company's portfolio consists of hotels, retail establishments, offices, and luxury residences. Sunteck Realty Limited has a proven track record of meeting deadlines and budgets while producing high-caliber projects. Sunteck Realty Limited plans to develop two luxury housing projects in two of Mumbai's sought-after locations, Nepean Sea Road in South Mumbai and Bullock Road, Bandstand in Bandra (West), with a Gross Development Value (GDV) of Rs. 3,000 crore.
- Prestige Estates Projects Limited:** As a real estate development company, Prestige Estates Projects Limited focuses on creating residential, commercial, retail, and hospitality projects. The company's portfolio of projects is varied and includes hotels, commercial centers, offices, and opulent residential buildings. Prestige Estates Projects Limited was present in a number of significant Indian marketplaces as of September 2021, including Bangalore, Chennai, Hyderabad, and Kochi. Additionally, the business recently revealed aspirations to grow into foreign areas,

such as the Middle East, Australia, and the United Kingdom. Currently, Prestige Ltd has acquired 21 acres of prime land in Bengaluru's Whitefield area for a residential project spanning 4 million sq ft. valued at Rs. 450 crore.

- **Oberoi Realty Limited:** One of India's top real estate developers is Oberoi Realty Limited. Its main activity is the development of projects related to social infrastructure, retail, residential, commercial, and hospitality. The company's portfolio of projects is varied and includes hotels, commercial centers, offices, and opulent residential buildings. The Oberoi Mall, Oberoi International School, and Oberoi Sky City in Mumbai are a few of the well-known projects that Oberoi Realty Limited has created. Although Oberoi Realty Limited's operations are currently mostly focused in India, the business has indicated that it would like to grow internationally in future. As of February 2024, Oberoi Realty has announced a strategic agreement with the renowned luxury hospitality brand, Marriott International, to jointly develop two Marriott properties within Oberoi Realty's existing projects located in Thane and Borivali.
- **Lodha Group:** With locations in Mumbai, Pune, Hyderabad, and London, Lodha Group is one of the biggest real estate developers in India. It has created a number of upscale residential and business developments, such as townships, office buildings, villas, and luxury apartments. The company is well-known for creating the Lodha Bellissimo, an opulent residential skyscraper in Mumbai, and the World One skyscraper, one of the highest residential structures in the world. It is also well-known for its emphasis on design, quality, and client happiness. The Lodha Group is well-known not just in the real estate development industry but also in the property management and hotel industries. The Lodha Group has forged a partnership with the prestigious hotels and resorts of the Leela Palaces, they plan to construct a luxury hotel palace in Ayodhya.
- **Godrej Properties Limited:** One of the oldest and most reputable companies in India, Godrej Industries Limited, established Godrej Properties Limited as a real estate development branch. The business is renowned for its creative design, superior construction, and customer-focused methodology. Major cities like Mumbai, Bangalore, Pune, Kolkata, Chennai, Hyderabad, and Delhi-NCR are among the projects in its portfolio. In addition, Godrej Properties is growing its footprint abroad by pursuing projects in Dubai, Singapore, and the United Kingdom. The company is well-known in the commercial leasing market and offers property management services in addition to real estate development. Godrej Properties expanded its business by acquiring 10 land parcels, eight outright, last fiscal year to develop housing projects over Rs. 21,000 crores. They aim to purchase more land parcels this fiscal , targeting sales and bookings of Rs. 20,000 crores.
- **DLF Limited:** DLF Limited stands as one of India's foremost real estate developers, boasting a diverse portfolio spanning residential, commercial, and retail properties. With a track record encompassing over 30 million square feet of commercial and retail spaces nationwide, including malls, offices, and hotels, the company is a prominent player in India's real estate landscape. DLF Limited extends its influence to infrastructure development, collaborating with the government on projects like highways, airports, and metro systems to enhance the country's infrastructure. Beyond real estate, the company offers property management services, including facility management, hospitality, and educational initiatives. This year, DLF Ltd, headquartered in Gurugram, will inaugurate its inaugural project in Mumbai, marking its return to a market it had withdrawn from nearly 12 years ago. This move follows the sale of a land parcel to Macrotech Developers during that period.
- **Brigade Enterprises Limited:** Brigade Enterprises Limited stands as one of a prominent figure in India's real estate sector, renowned for its wide-ranging portfolio spanning residential, commercial, and hospitality ventures. This includes a variety of projects such as apartments, villas, townships, office and retail spaces, hotels, resorts, and serviced apartments. Alongside its real estate endeavors, Brigade Enterprises engages in property management,

facility management, and educational initiatives. The company's commitment to excellence is evident through its numerous accolades, recognizing the quality of its projects. Additionally, Brigade Enterprises prioritizes sustainable development, earning several certifications for its environmentally friendly building initiatives. Brigade Group, is gearing up to introduce over 6.5 million square feet of residential projects during this fiscal year, with a primary focus on Bengaluru and Chennai. Pavitra Shankar, Managing Director of Brigade Enterprises Limited, revealed that these ventures are anticipated to necessitate an investment of approximately Rs. 2,700 crore.

- SOBHA Limited:** SOBHA Limited is primarily focused on developing residential, commercial, retail, and hospitality properties, catering to luxury residential living, office spaces, hotels, and shopping complexes. Renowned for its unwavering commitment to quality, the company's construction ethos sets it apart. Among its notable projects are SOBHA City in Gurugram, SOBHA Hartland in Dubai, SOBHA Silicon Oasis in Bangalore, and SOBHA Dream Acres in Bangalore. As of September 2021, SOBHA Limited has established a significant presence in key Indian markets, including Bangalore, Chennai, Coimbatore, Delhi NCR, Pune, Thrissur, and Kochi. Additionally, the company has unveiled ambitious plans to extend its reach into international territories, targeting the Middle East, Europe, and Africa for expansion. SOBHA Limited has unveiled its latest luxury row house project, 'Sobha Crystal Meadows'. Situated off Sarjapur Road and spanning an estimated 26 acres of land, this development marks Bangalore's inaugural millionaire row house project.

5.4 Key government policies/initiatives for commercial real estate

5.4.1 Commercial real estate

- Relaxations:**

The RBI had also announced certain relaxations towards the Real Estate sector where - NBFCs can extend commercial real estate loans by 1 year if projects delayed are due to reasons beyond the control of promoters without treating it as restructuring. This measure aimed to maintain adequate liquidity in the system to promote the credit flow through financial institutions as well as ease financial stress.

- National Logistics Portal :**

The government is launching a National Logistics Portal, an integrated IT Platform that will act as a logistics marketplace to help exporters, importers and service providers exchange documents seamlessly and transact business. The portal will be a single-window platform having linkages with the IT systems of railways, road transport & highways, aviation, CBEC and state transport departments.

- Real Estate (Regulation and Development) Act**

The Government announced that Covid-19 related disruption was to be treated as force majeure under Real Estate (Regulation and Development) Act provision and registration and project completion timelines would be extended by 6 months /9 months, depending on which part of the country the project is being constructed and if these were falling after 25 March 2020

- Real Estate Investment Trust (REIT):**

Approved by the Securities and Exchange Board of India (SEBI), REIT is a platform to pool money from investors all across the country. The introduction of REITs is aimed towards allowing investors to make safe investments in the real estate of India, and the amount so collected will subsequently be utilised towards the development of commercial properties in order to generate income.

- **Special Economic Zones Act (SEZ Act):**

The Department of Commerce announced changes to the **Special Economic Zones Act, 2005 (SEZ Act)** on December 6, 2023, and these changes are anticipated to have a positive impact on office space leasing in India. The government has made it possible for Special Economic Zones to lease space in terms of floors or in part, allowing office park operators all over the nation to improve the occupancy of their buildings. By amending the SEZ Rules, 2006, the new regulations partially and floor-by-floor denotify these office parks. These operators are now allowed by the rules to divide, for commercial purposes, a portion of the built-up space within an SEZ unit on a floor-by-floor basis.

- **Foreign Direct Investment (FDI):**

In January 2018, the Government allowed 100% FDI in single-brand retail trading and construction development without Government approvals. The FDI caps were revisited for several industries and this promoted foreign agencies to bring in their technology, expertise and money into India. New companies setting shop in India meant more office spaces, larger built-to-suit technology centres and Special Economic Zones. Due to job creation, residential segment demand will increase. The government's move to liberalise FDI norms in the construction industry provided a leg-up to the investments in the real estate industry. According to industry sources, real estate investment reached USD 1.35 billion during the September 2021 quarter, which indicated a nine-fold increase. FY23 saw investments worth USD 170.3 billion in overall infrastructure construction activities and USD 14.6 billion in the construction development sector including townships, housing, built-up infrastructure and construction development projects.

- **Real Estate Investment Trust (REIT) :**

Approved by the Securities and Exchange Board of India (SEBI), REIT is a platform to pool money from investors all across the country. The introduction of REITs is aimed towards allowing investors to make safe investments in the real estate of India, and the amount so collected will subsequently be utilized towards the development of commercial properties in order to generate income. This is an initial step and in upcoming future, REITs may also come to fund residential segments. Dividend payments to REITs and INVITs are proposed to be exempted from TDS. Debt Financing of REITs by Foreign Portfolio Investors will be enabled by making suitable amendments to the relevant legislation.

5.4.2 Residential real estate

- **Real Estate and Regulation Act (RERA)**

The real estate sector has benefitted from RERA, which was implemented on May 01, 2017, despite it being subdued for a few months as developers put their operations on hold, to understand and comply with all the regulations. In the long run, RERA makes the real estate sector more transparent and process-driven. RERA has a direct implication for the ceramic sector as well. In a medium time, frame, RERA is expected to bode well for the organized real estate sector as well as the ICTI (Information and Communication Technology Infrastructure). It was brought into effect with a view of regulating the import, manufacture, sale, transport, distribution and use of insecticides in order to prevent risk to human beings and animals.

- **Smart Cities**

The building and push towards SMART Cities also heralded the opportunity for infrastructure development which includes roads, railways, and commercial centres. With the government easing the transaction and compensation process around land acquisition also helped developers overcome challenges and hurdles in development projects. Housing and inclusiveness - expand housing opportunities for all. Under the scheme, a total of 2,082 projects costing Rs. 70,600

crores are under construction and 5,937 projects costing Rs. 108,604 crores have been completed as of July 2023, out of the total target of 8,019 projects in 100 cities.

• Pradhan Mantri Awas Yojana (PMAY)

The Pradhan Mantri Awas Yojana (PMAY) was introduced as part of the 'Housing for All' initiative with the objective of facilitating the provision of affordable housing at a reduced cost by the deadline of December 2024. In the Union Budget 2023-24, the government allocated Rs 79,590 crores toward this scheme, an increase of 3% y-o-y. Under the PMAY-Urban scheme, pucca houses are provided to individuals falling within the Economically Weaker Sections/Low Income Group (EWS/LIG) and Middle-Income Group (MIG) categories, including slum dwellers. As of 10th July 2023, approximately 75.31 lakh houses have been completed, around 112.22 lakh houses have commenced construction, and approximately 118.9 lakh houses have received official sanction, while the total demand stands at approximately 112.24 lakh houses. The PMAY-Gramin scheme aims to offer pucca houses to rural individuals lacking shelter or residing in kutchha (temporary) and dilapidated housing structures. As of July 2023, a total of 260.27 lakh houses have been completed, indicating a 78% achievement rate in relation to the Ministry of Rural Development's (MoRD) target of 293.50 lakh houses.

5.5 Key growth drivers

5.5.1 Commercial real estate

- **Increasing Population to Result in More Workforce:**

China's population grew at a rate of 12% from 125 crores in 1999 to 140 crores in 2019 whereas India's population increased by 32% from 104 crores to 137 crores during the same period. India accounts for the largest populated country in the world and its rising population will result in more individuals joining the workforce. A higher number of employees will create more demand for office space and will therefore be a key demand driver in the future.

- **Warehousing Growth Drivers:**

Flourishing E-Commerce: The e-commerce boom, particularly accelerated by the pandemic, fuels the demand for warehousing facilities. The shift towards online shopping, driven by lockdown restrictions and changing consumer behavior, necessitates increased storage capacity for online marketplaces. **Tier-2 and Tier-3 City Demand:** While e-commerce growth initially centered around metros, rising demand from smaller cities propels the need for warehousing expansion. To facilitate efficient last-mile deliveries, e-commerce companies are investing in warehousing infrastructure in these regions.

- **Government Initiatives and Manufacturing Shift:**

Government initiatives like the Production Linked Incentive (PLI) scheme bolster the domestic manufacturing sector, increasing demand for warehousing. Additionally, the shift of global manufacturing from China to countries like India contributes to warehousing growth, driven by the need for storage space for manufacturing and pharmaceutical industries.

- **Favorable Demographics:**

India's youthful demographic profile, characterized by a large young population and a declining dependency ratio, augurs well for discretionary spending on leisure and hospitality. This demographic trend fuels growth in hospitality and food services, indirectly driving demand for warehousing as these sectors require storage infrastructure to support their operations.

- **Increasing Demand for Cold Chain Logistics from Pharma and Packaged Foods Industries**

Cold chain logistics is another key demand driver for the supply chain industry. The cold chain logistics system allows for the safe transport of temperature-sensitive goods and products along the supply chain. This branch of logistics depends on science and technology to maintain the balance between temperature and perishability.

Further, in the post-pandemic world where the safe transportation of vaccines and booster doses will remain crucial, cold chain logistics will propel the demand for efficient integrated supply chain management. Alongside the pharma industry, another user of cold chain logistics is the grocery and meat products industries. With the advent of e-commerce and speciality companies offering varieties of meat and meat products in a time-sensitive manner, the reliance on cold chains, and, consequently on integrated supply chains will increase.

5.5.2 Residential real estate

- **Increased Economic Growth and Urbanization to Boost Demand**

The Indian economy has experienced steady growth in the past decade and is expected to be one of the fastest-growing economies in the post-pandemic era. Whereas the rising income and employment opportunities have led to migration to urban areas, thereby creating a greater need for real estate in major Indian cities.

- **Government Policies Enabling Demand through Greater Transparency**

The real estate segment has received a massive boost from government initiatives such as the Affordable Housing Scheme, Goods and Services Tax (GST), and the Real Estate Regulation and Development Act, 2017 (RERA). While the initial months following the implementation of these initiatives created some disruption, the policies increased the transparency and competence of the sector. As a result, the confidence of domestic and foreign investors in the real estate industry witnessed a boost leading to higher FDI in the sector.

- **Rising Number of Nuclear Families**

India has the largest population in the world which is about 1.4 billion. The population largely consists of young and middle-aged and hence this shows that India has a huge potential consumer market and a huge housing demand gap. According to the World Bank, India's urban population will account for 36% of the total population in 2022 and 40.76% of the total population by 2030. With the deepening of the process of urbanization in India, the continuous increase of urban population and the continuous development of economy will continue to promote the development of this industry. The nuclear family concept is well-linked with the rapid urbanization of the country. According to the 2001 census, out of 19 crore households, 10 crore or approximately 50% were nuclear households. Whereas in the 2011 census, the share reached 52.1% – 13 crores nuclear families out of 24.9 crore households. People migrate from one place to another in search of jobs which ultimately increases the nuclear family counts. An increase in the nuclear family will lead to an eventual growth in demand for residential units.

- **Relocations**

The pandemic made consumers from the middle-income and above categories aware of the shortfalls of their present residences. With families spending all their time within the confines of their homes, most became acutely aware of the lack of space or limitations with respect to the facilities offered. We expect such families, mostly from metros and Tier-1 cities, to be motivated to relocate and make new purchases due to the want of more open space, modern amenities, proximity to their workplace, and desire to relocate closer to extended families and friends.

- **Shift in Buying Behaviour**

COVID-19 has shifted the attitude that resulted in consumers buying new homes. One, the financial uncertainty brought on by the pandemic is estimated to have led to many consumers considering a house as an essential financial security.

Consumers are seriously evaluating their lifestyle and may want to move to larger homes, broadly considering their family size and their work-from-home & study-from-home schedules. Accordingly, the demand for projects with good architecture, uncluttered space, and recreational activities for children and the elderly is projected to increase.

5.6 Key risks and challenges

- **Regulatory Obstacles**

The creation and operation of sound logistics infrastructure can be slowed down if multiple regulatory agencies are not brought under a single umbrella. Currently, hindrances with land acquisition and consolidation and changes in land use are major impediments. An absence or lack of transparency in compliance has added to the woes.

- **Unavailability of Skilled Staff in Warehousing**

While India's demography is an advantage, the lack of appropriately skilled labour is a cause for concern. The supply chain industry has experienced this crunch more sharply than other industries as it is primarily a support industry. The industry needs to build a group of skilled personnel comprising truck drivers, warehousing managers, quality inspection supervisors, and seafarers. This is because the unavailability of skilled workers is a consequence of inadequate training and the absence of proper leadership.

Besides, given the unorganized nature of the industry, it is characterized by poor working conditions and a low pay scale due to which it does not necessarily attract skilled personnel. There are also limited institutes aimed at operational and technical training, which further accentuates the problem. With new innovations and developments cropping up in the cold supply chain segment and specialized warehousing, it is imperative to develop a workforce well-equipped and efficient to avoid hiccups.

- **Land Availability**

Litigated land is one of the challenges faced by the real estate sector and the developers. According to a survey conducted by the MahaRERA, around 16% of projects and 31% of built-up spaces are or have been in legal disputes. In Mumbai, these figures tally to about 30% of the real estate projects and 50% of the built-up space. For Thane, the corresponding figures are 26% and 36%, respectively. Further, the unavailability of affordable land is one of the biggest barriers to the creation of affordable housing in cities. The government has several urban land banks which are currently not utilized. Such land can be allocated for affordable housing projects and the creation of affordable housing can be driven via a PPP model.

- **Outdated Building Bylaws**

India has a population of about 1.4 billion as of 2022. With the current rate of population explosion, the demand for space is vital. Over 50% of the world's population lives in cities, and the number is expected to rise by 250 crores by the year 2050. However, the current Floor Space Index (FSI) norms in the cities are not on par with the growing demands of consumers. As a result, while the demand for more housing units is likely to be on the upside, outdated bylaws remain a critical hurdle on the supply side.

- **Tax Regime Changes**

In addition to the aforementioned financial challenges, the implementation of the GST is another factor that impacts the real estate industry. Before the implementation of GST, a service tax of 4.5% was applicable in the case of an under-construction property. However, post-GST, the rate has sharply risen to 12%, impairing the attractiveness for property investors. As buyers were paying registration charges and stamp duty on properties, the inclusion of GST increased the statutory cost of the property of the investor by 20%.

- **Approvals and Procedural Difficulties**

The real estate sector in India is heavily regulated by the central & state governments and local bodies. Real estate developers are required to comply with a number of laws and regulations, including policies and procedures established and implemented by local authorities in relation to land acquisition, transfer of property, registration, and use of land. These laws often vary from state to state.

If the project is in the preliminary stages of planning, any delay in obtaining approvals could warrant revised scheduling of project timelines. It not only delays a project but also increases the cost of the property for both buyers and developers.

- **Elevated Finance Costs**

The cost of funds is rising due to increasing monetary policy rates. The RBI raised the repo rates from 4% in April 2022 to 6.5% in January 2023. This increase may raise the house loan interest rates and affect the demand for affordable & lower middle-class housing sectors. The interest rate hike can even dampen the sentiments of homebuyers in the sector.

6. Competitive Landscape

6.1 Business Overview

Table 21: Business Overview

Name of the Company	Business Overview
<p>Highway Infrastructure Limited</p>	<p>Highway Infrastructure Limited began its journey in 1995 as a small partnership firm founded by Anoop Agrawal and Arun Kumar Jain. Specializing initially in real estate and civil contracting, the company steadily grew and was formally incorporated as a private limited company in 2006. This transformation marked a significant milestone, paving the way for Highway Infrastructure Limited to expand its operations and undertake a variety of projects, including urban and rural roads, bridges, and residential housing developments.</p> <p>In May 2018, the company transitioned to a public company, reflecting its continued growth and ambition within the construction sector. Highway Infrastructure Limited is recognized as a key player in Central India's construction industry, known for its commitment to delivering quality infrastructure projects. The company's evolution from its modest beginnings to its current stature underscores its dedication to excellence and its ability to adapt to changing market demands.</p> <p>Highway Infrastructure Limited has its core business segments in highway and tandon tollways, urban development, toll collection booths, roads and bridges and housing projects.</p> <p>Driven by a vision to contribute meaningfully to infrastructure development in India, Highway Infrastructure Limited emphasizes sustainable construction practices and corporate social responsibility initiatives. This approach not only enhances project outcomes but also ensures positive impacts on the communities they serve.</p>
<p>B.R. Goyal Infrastructure Limited</p>	<p>B.R. Goyal Infrastructure Limited specializes in providing construction services for infrastructure projects. The company focuses on constructing roads, bridges, highways, buildings, and other civil structures. Serving both commercial and residential sectors in India, B.R. Goyal Infrastructure Limited is dedicated to meeting the construction needs of diverse industries across the country.</p> <p>Originally established as a partnership firm named M/s. Bal Krishna Ramkaran Goyal in 1986 in Indore, BRGL transitioned to B.R. Goyal Infrastructure Private Limited (BRGL) in April 2005. Subsequently, on May 9, 2018, it became a closely held public company.</p> <p>BRGL specializes in constructing roads, bridges, and buildings primarily in Madhya Pradesh (MP), with expanding operations in Manipur and Mizoram. The company operates four Ready-Mix Concrete (RMC) manufacturing units and a 1.25 MW windmill in Jaisalmer, Rajasthan. BRGL holds the prestigious A-5 class (Highest) status with the Public Works Department (PWD) of MP and the Indore Development Authority (IDA).</p> <p>BRGL has an operational track record of over three decades in the construction industry and has executed many mid-size projects across multiple segments in Madhya Pradesh.</p>

<p>Skylark Infrastructure Private Limited</p>	<p>Skylark Infra Private Limited specializes in infrastructure development and construction, including roads, highways, bridges, and building projects. They provide comprehensive services from design and engineering to project management, quality control, and sustainability practices.</p> <p>In the toll collection sector, Skylark Infra plays a significant role by constructing toll booths, plazas, and related infrastructure, and integrating advanced electronic toll collection systems such as RFID and license plate recognition technologies. They also offer maintenance and support for these systems, ensuring smooth and efficient toll operations as part of broader toll road projects.</p>
<p>Ashirwad Smart Infralink Private Limited.</p>	<p>Ashirwad Smart Infralink Private Limited is a company specializing in infrastructure development with a strong emphasis on integrating smart technologies. Their operations encompass the design, planning, and construction of infrastructure projects such as roads and bridges, as well as the implementation of advanced technologies for smart traffic management and automated lighting. They offer comprehensive project management, consulting services, and maintenance support while focusing on sustainability. In toll collection, the company deploys and manages electronic toll systems, integrates advanced toll management technologies, oversees revenue collection, and provides customer support, enhancing both efficiency and user experience.</p>
<p>AK Construction Private Limited</p>	<p>AK Construction Private Limited operates across various construction sectors, managing large-scale infrastructure projects such as roads, highways, and bridges, as well as residential and commercial building projects.</p> <p>They provide comprehensive project management, consulting services, and ensure quality control and safety throughout their work. In the realm of toll collection, AK Construction is involved in constructing toll booths and related infrastructure, integrating toll collection systems, and offering maintenance and upgrades for these systems. Their approach emphasizes sustainable practices and efficient project execution.</p>
<p>Ranchor Infra Developers</p>	<p>Ranchor Infra Developers plays a significant role in the toll collection sector by constructing and managing toll-related infrastructure such as booths and plazas. They specialize in integrating advanced toll collection systems, including electronic technologies like RFID and license plate recognition, to streamline operations. Additionally, they provide ongoing maintenance and support to ensure the smooth functioning of these systems. Their involvement spans the construction, management, and technical aspects of toll roads, ensuring efficiency and effectiveness in toll collection processes.</p> <p>Ranchor Infra Developers is a company engaged in infrastructure and real estate development, focusing on planning, constructing, and managing residential, commercial, and mixed-use properties. Their operations include undertaking large-scale infrastructure projects like roads and bridges, providing project management services to ensure timely and budget-compliant completion, and offering consulting services for market analysis and financial modeling. They also emphasize sustainability and innovation, incorporating green practices and new technologies to enhance efficiency and minimize environmental impact. The company's success hinges on effective project management, stakeholder relationships, and adaptability to market and regulatory changes.</p>

6.2 Benchmarking Based on Profitability Parameters

- Highway Infrastructure witnessed a growth of 26.00% from FY23 to FY24. It grew from Rs. 45,513 lakhs in FY23 to Rs. 57,345 lakhs in FY24.
- Skylark Infra Engineering stood first in terms of revenue at 189,107 lakhs with a growth of 55.94% in FY23 when compared with FY22.

Table 22: Revenue of Peer Companies (in Rs. Lakhs)

	FY22	FY23	FY24
Skylark Infra Engineering	121,267	189,107	NA
Ranchor Infra Developers	23,295	70,570	NA
Highway Infrastructure Ltd.	35,503	45,513	57,345
Ashirwad Smart Infralink Pvt. Ltd	30,210	35,537	NA
B.R. Goyal Infrastructure Ltd.	22,488	34,622	NA
AK Construction Pvt. Ltd.	3,363	10,027	NA

Source: Company Filings.

Table 23 : EBITDA Margin (%) & PAT Margin (%)

	EBITDA Margin			PAT Margin		
	FY22	FY23	FY24	FY22	FY23	FY24
Highway Infrastructure Ltd.	4.89%	6.08%	6.70%	2.40%	3.03%	3.71%
Skylark Infra Engineering	7.63%	7.54%	NA	3.33%	5.23%	NA
Ashirwad Smart Infralink Pvt. Ltd	3.40%	3.98%	NA	2.34%	3.02%	NA
AK Construction Pvt. Ltd.	1.07%	0.33%	NA	1.02%	0.23%	NA
Ranchor Infra Developers	2.54%	8.14%	NA	2.29%	6.12%	NA
B.R. Goyal Infrastructure Ltd.	8.64%	8.82%	NA	3.33%	4.99%	NA
Average	4.70%	5.82%	6.70%	2.45%	3.77%	3.71%

Source: Company Filings, CareEdge Research

- Highway Infrastructure Ltd. had an EBITDA margin for FY24 at 6.70% amongst peers – the 3-year average of FY22-FY24 of Highway Infrastructure Ltd. has the EBITDA margins at 5.89%.
- B.R. Goyal Infrastructure Ltd. had the highest EBITDA margin of 8.82% in FY23 amongst its peers.

- In FY23, Highway Infrastructure Ltd. observed a profit after tax margin at 3.03%. The average being of Highway Infrastructure at at 3.05% for the past 3 years.
- Ranchor Infra Developers had the highest PAT margin for at 6.12% as of FY23. Followed by Skylark Infra Engineering at 5.23%.

Table 24: Return on Assets (%), Return on Equity (%) & Return on Capital Employed (%)

	Return on Assets			Return on Equity			Return on Capital Employed		
	FY22	FY23	FY24	FY22	FY23	FY24	FY22	FY23	FY24
Highway Infrastructure Ltd.	5.49%	8.81%	10.57%	13.44%	18.45%	22.98%	13.41%	19.47%	24.45%
Skylark Infra Engineering	8.71%	15.37%	NA	22.66%	35.69%	NA	28.31%	31.97%	NA
Ashirwad Smart Infralink Pvt. Ltd	10.99%	14.89%	NA	14.73%	18.32%	NA	20.70%	24.18%	NA
AK Construction Pvt. Ltd.	2.05%	0.67%	NA	63.83%	2.19%	NA	34.83%	5.27%	NA
Ranchor Infra Developers	5.74%	31.14%	NA	8.56%	40.86%	NA	7.30%	47.76%	NA
B.R. Goyal Infrastructure Ltd.	3.68%	8.77%	NA	8.55%	16.50%	NA	10.16%	17.62%	NA
Average	6.11%	13.27%	10.57%	21.96%	22.00%	22.98%	19.12%	24.38%	24.45%

Source: Company Filings, CareEdge Research

- Highway Infrastructure Ltd. has the Return on Assets ratio at 8.81% in FY23 which is increased to 10.57% in FY24.
- Ranchor Infras Developers had the best ROA ratio in FY23 at 31.14% in FY23 whereas AK Construction Pvt. Ltd. had the worst ROA of 0.67%.
- Highway Infrastructure Ltd. had the third best Return on Equity amongst its peers at 18.45% in FY23, which has improved in FY24 at 22.98%
- A.K. Construction Pvt. Ltd. had the ROE of 2.19% and Ranchor Infra developers of 40.86% as of FY23.
- Highway Infrastructure Ltd. has Return on Capital Employed ratio in FY23 at 19.47%. The company has ROCE ratio for FY22 ,FY23 and FY24 at 13.41%, 19.47% and 24.45% respectively.
- Ranchor Infra Developers has the best ratio at 47.76% in FY23 whereas the worst ratio was of AK Construction at 5.27% in FY23.

Table 25: Debt to Equity (x) & Current Ratio (x)

	Debt-Equity Ratio			Current Ratio		
	FY22	FY23	FY24	FY22	FY23	FY24
Highway Infrastructure Ltd.	0.90	0.85	0.75	1.55	1.83	1.69
Skylark Infra Engineering	1.08	0.91	NA	1.56	1.46	NA
Ashirwad Smart Infralink Pvt. Ltd	0.07	0.07	NA	3.22	3.75	NA
AK Construction Pvt. Ltd.	0.84	0.49	NA	0.89	1.65	NA
Ranchor Infra Developers	0.23	0.20	NA	4.10	4.10	NA
B.R. Goyal Infrastructure Ltd.	1.64	1.35	NA	2.15	2.89	NA
Average	0.79	0.64	0.75	2.25	2.61	1.69

Source: Company Filings, CareEdge Research

- Highway Infrastructure Ltd. had debt to equity ratio of 0.75x, with debt being Rs. 6,962 lakhs and equity holdings of Rs 9,317 lakhs in FY24, the company's ratio has consistently declined.
- B.R. Goyal had the highest debt to equity ratio at 1.35x in FY23.
- Highway Infra has current ratio of 1.83x in FY23 where Ranchor Infra Developers had the current ratio at 4.10x as of FY23 and Skylark Infra Engineering had the current ratio of 1.46x.

Table 26: Formulas Used

Parameter	Formula
EBITDA	Depreciation + Finance Cost+ Profit (Loss) before exceptional item and tax- Other Income
EBITDA Margin	EBITDA/ Revenue from operations
PAT Margin	PAT/ Total Income
Debt	Long term Borrowings + Short term Borrowings
Debt to Equity	Debt/ Total Equity
Return on Assets	PAT/ Total Assets
Return on Equity	PAT/ Total Equity
EBIT	Profit (Loss) before exceptional item and tax + Interest
Return on Capital Employed	EBIT/ (Total Equity + Total Debt- Cash and Cash Equivalent)
Current Ratio	Current Assets/ Current Liabilities

6.3 Company Profile

Unless the context otherwise requires, in this section, references to "the Company" and "it" refers to Highway Infrastructure Limited and its Subsidiary and an entity under the control of Highway Infrastructure Limited i.e., the AOP, on a consolidated basis.

The Company is engaged in the business of toll collection, infrastructure development and management, and real estate business. While the Company's business spans various facets of infrastructure development and management, toll collection stands out as a significant mix of its business model, driving consistent revenue and long-term financial stability.

The Company's toll collection business model is centred on a combination of technology integration and revenue management to optimize toll operations across its highway projects. The Company is one of the few toll operators who have managed toll collection based on ANPR technology on Delhi-Meerut Expressway. The Company has operated tolls on some of the known inter-state and intra-state expressways across 11 states and one Union Territory. The Company employs updated Electronic Toll Collection (ETC) systems, which leverage Radio Frequency Identification (RFID) tags and digital payment platforms to facilitate seamless and contactless toll payments. This model not only reduces congestion at toll plazas but also enhances operational efficiency by minimizing transaction times and errors, thereby resulting in overall better management.

Key highlights of Company's toll business

1. **Technological edge:** The Company is one of the few toll operators in India who have managed toll collection based on upcoming ANPR technology (Automatic Number Plate Recognition) on Delhi-Meerut Expressway. In this system, applicable user fee is deducted from FASTag based on the entry and exit of the vehicles as captured by ANPR cameras installed at various entry and exit locations. Under this technology, the toll is directly collected using implementation of toll collection system based on new technology with limited physical barriers. The company has well-adopted Electronic Toll Collection (ETC) systems across its toll plazas. These systems facilitate the automatic deduction of toll fees through Radio Frequency Identification (RFID) tags or other digital payment methods, reducing congestion at toll plazas and improving the overall user experience.
2. **Operational experience:** The company has operated toll collection centres in 11 states and one union territory, including some prominent, busy and marquee Toll way like Delhi Meerut Expressway, Mokha expressway toll which is the only expressway that connects the Kandla port and Mundra port (Adani Port), GT Road Toll way (Haryana/Punjab). Its toll collection business is mainly operational across expressways typically having multiple lanes of traffic services.
3. **Customer Service offerings:** The Company is committed to providing a better and convenient experience for toll road users. This includes offering multiple payment options, including cash, credit/debit cards, mobile payments, and prepaid toll cards. Its toll centres are equipped with standard facilities like customer care numbers and centres which aid in smooth operational functionality and customer experience.
4. **Technology employed:** The Company operates on NHAI's implemented systems, security measures, including their systems and protocols to protect customer data, transaction recording and to prevent any irregularities in operations, ensuring transparency and accountability in business.

Engineering Procurement & Construction projects:

Over the years, the company has developed an established EPC and construction business and have gradually added facilities to support and supplement its EPC and construction business through auxiliary services. It has developed inhouse resources with competencies to deliver a project from conceptualization to completion.

It is currently executing projects across Indore and other cities like Ratlam, Khandwa etc.. It has a track record in executing projects of different types like roads, bridges, tanks, irrigation related construction and civil buildings etc. in this segment, it caters to both private and public sectors like PWD, IDA, IMC, MPIDC, MPRRDA, MPBDC, Shubham Builders, Shubham Energy etc. The Company has developed execution capabilities and a track record of delivering projects meeting customer requirements. It has participated and completed projects in various government schemes like Pradhan Mantri Awas Yojna (PMAY), Pradhan Mantri Gram Sadak Yojna (PMGSY) and Jal Jeevan Mission.

Real Estate:

Real Estate is its smallest business segment. Under this segment, it owns, develops, constructs and sells commercial and residential properties. Over time, it has been engaged in developing townships, gated communities, housing projects and townships.

The increasing focus on toll and EPC businesses has helped the company in gaining experience and knowledge in undertaking projects of different sizes and at different locations. Beyond construction, the Company also offers a wider

suite of services that encompass the different facets of highway infrastructure. This includes ongoing maintenance, safety mechanisms and performance monitoring, assisting its operations to deliver value. The company's experienced manpower, coupled with its equipment and machineries, ensures better control over execution and completion of our various projects, whether toll collection, EPC or real estate business.

Key growth drivers

Execution capabilities with industry experience

It has close to 30 years of experience in running the toll collection business vertical and executing EPC contracts comprising of construction and development of state and national highways, bridges, etc. and also its real estate business of developing townships, housing projects and gated communities. The Company possesses knowledge and understanding of running the business of toll collection, constructing roads, bridges and urban infrastructure, along with development of townships, housing projects and gated communities. Its variety of business verticals gives it advantage in bidding for projects.

Order book and revenue visibility

As of August 31, 2024, the Company (on a consolidated basis) has an Order Book of INR 2,814.24 million in EPC space from various projects and INR 3,149.59 million in toll collection business from various ongoing toll collection projects.

Diversified revenue base and portfolio

Engaging in multiple sectors diversifies its revenue streams and reduces dependency on a single sector, thus enhancing its overall stability. Engaging in multiple sectors allows flexibility to pursue the most profitable opportunities and giving it the benefit and leverage of wider options to balance between various sectors. It also undertakes ancillary financially accretive activities like leasing of spare equipment, sale of surplus material etc. which are incidental to its business lines.

Relationships created based on work performance, operational record of project execution

Most of the toll contracts are awarded to the company from NHAI whereas one contract is from Gujarat State Road Development Corporation Limited. It has a track record of projects done with public and private sector customers, which helps it in its business growth and in getting repeat business.

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About:

CareEdge is a knowledge-based analytical group offering services in Credit Ratings, Analytics, Consulting and Sustainability. Established in 1993, the parent company CARE Ratings Ltd (CareEdge Ratings) is India's second-largest rating agency, with a credible track record of rating companies across diverse sectors and holding leadership positions in high-growth sectors such as BFSI and Infra. The wholly-owned subsidiaries of CareEdge Ratings are (I) CARE Analytics & Advisory Private Ltd previously known as CARE Risk Solutions Pvt Ltd, and (II) CARE ESG Ratings Ltd, previously known as CARE Advisory Research and Training Ltd. CareEdge Ratings' other international subsidiary entities include CARE Ratings Africa (Private) Limited in Mauritius, CARE Ratings South Africa (Pvt) Ltd, and CARE Ratings Nepal Limited.

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